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03

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BUILD A 24/7 PC

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software essentials

THE NEW WEB 2.0 OS

Based on Ubuntu, gOS Rocket 2.0 runs fast on older PCs and integrates many Web 2.0 and AJAX services.

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- Kane & Lynch: Dead Men Demo
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- Microsoft .NET Framework 1.1
- Microsoft .NET Framework 2.0
- Microsoft .NET Framework 3.5
- Microsoft DirectX (November 2007)
- Mozilla Firefox 2.0.0.11 for Linux
- Mozilla Firefox 2.0.0.11 for Mac OS X
- Mozilla Firefox 2.0.0.11 for Windows
- PC Inspector Smart Recovery 4.5
- PeerGuardian 2.0 Beta6b
- Real Alternative 1.7.5
- SmoothWall Express 3.0
- Spybot — Search and Destroy 1.5.1
- SystemRescueCd 0.4.2
- The Witcher Demo
- Undelete Plus 2.94
- UnRAR 2.2
- VLC media player 0.8.6d for Mac OS X
- VLC media player 0.8.6d for Windows
- Wise-FTP 4.1.0
- XviD 1.1.3
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This logo indicates a free, complete and unrestricted software package, available only on APC's cover DVD.

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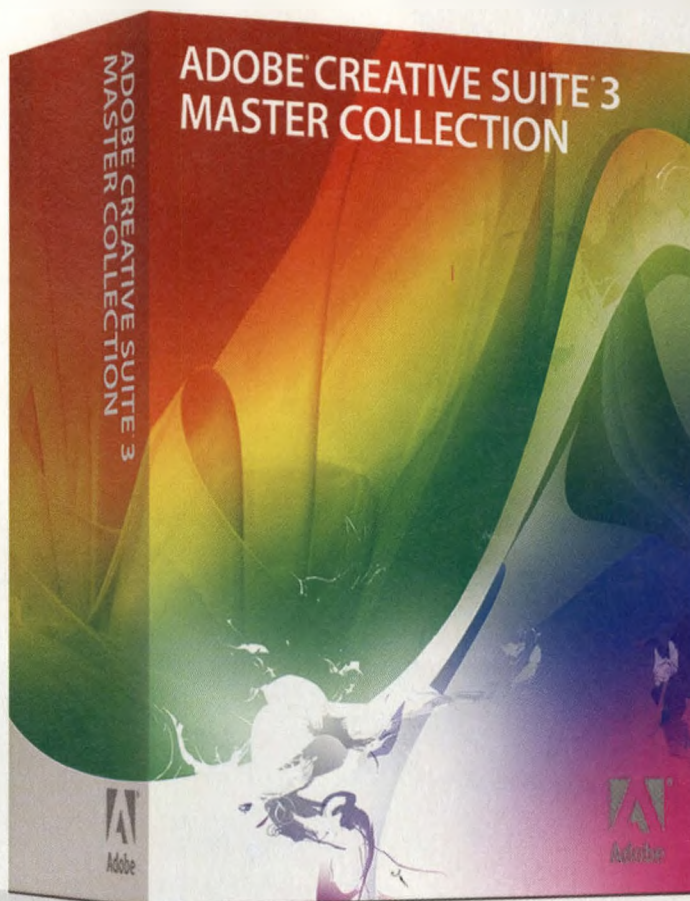


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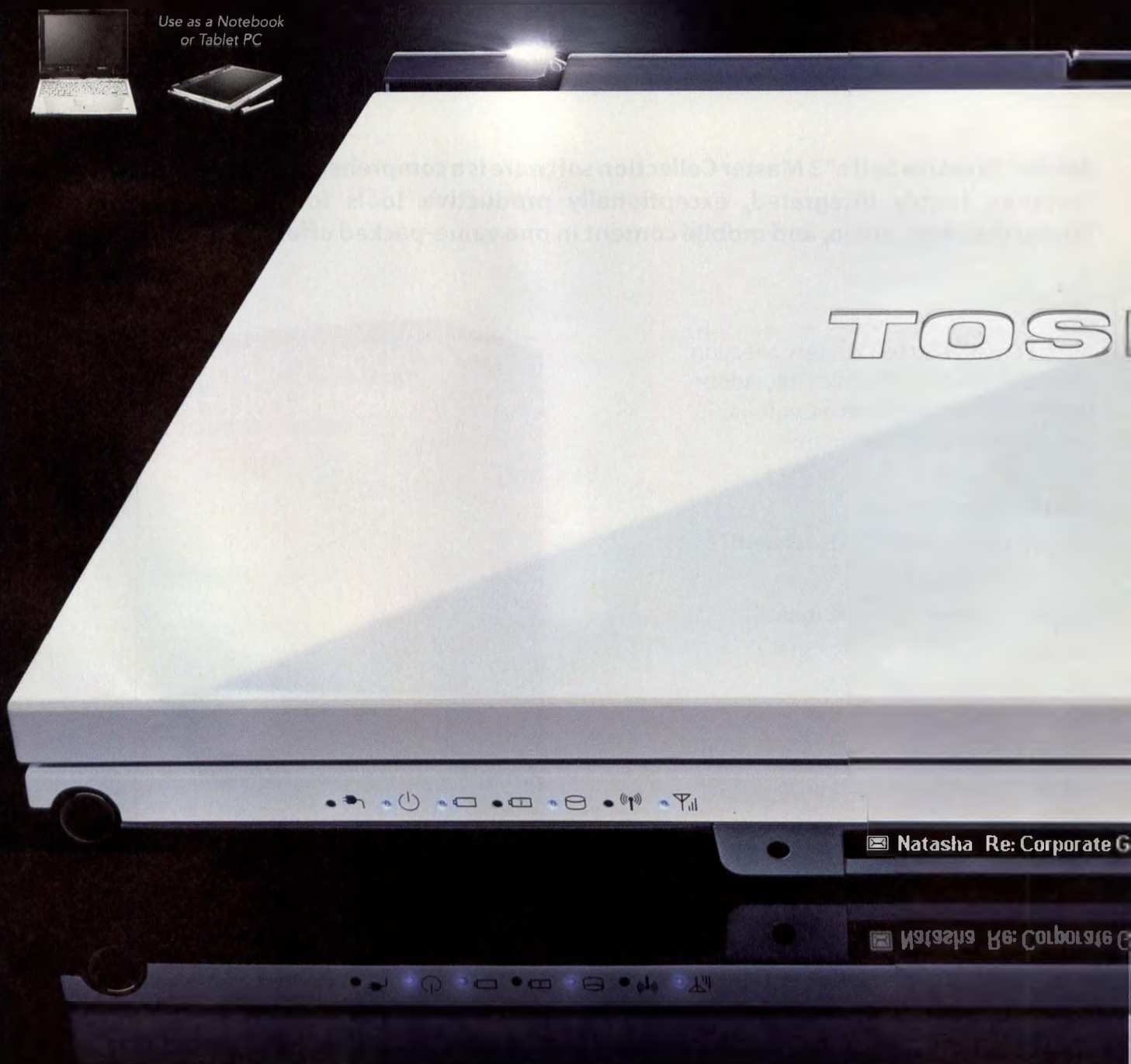
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editorial



TONY SARNO

At APC we're used to screening out the background noise of hype and marketing while we try to bring you our honest views on products that come into our Labs. But, every now and then, a brilliantly executed marketing campaign comes along that hypes a technology way beyond its worth and amazes us with its brilliance.

We're talking the ASUS Eee PC. We first started hearing about this mid-2007, at the same time as the OLPC (One Laptop per Child) project. The ASUS unit sounded extraordinary: a real laptop for less than \$500. The rumours grew and we got more excited. When we received an engineering sample, we fired it up, it worked, we were excited — and we ran a piece on it calling it amazing.

That was until I took one home later and tried to do some work with it. That's when reality hit. It wasn't a 'notebook', but a toy, with a tiny screen, tiny keyboard and tiny storage space. That got me thinking about how ASUS had brilliantly orchestrated its release and media reaction so that when it finally went on sale in Myer in December, it just flew off the shelves. The story on page 16 looks at how the Eee PC became such a phenomenon — despite not being much cheaper than entry-level notebooks from Acer, Dell or HP.

We've also launched a new column this month, called e-Penis. I first heard the term at an IT gathering one night, when a techie made fun of a mate who bought himself an iPhone, asking him, "Is your e-penis big enough now?" It was one of those wonderful moments when the tech sub-culture throws up a new term that just brilliantly defines a trend or a behaviour. I jotted down the word and we've now adapted it as a ranking for technologies.

If some gadget gets a bent pinky e-Penis rating, it means that we think the owner is a total wally. If it gets a straight pinky, we think that it's great and makes the owner look cool.

This month we can't think of a better product to get the first bent pinky award than an Apple MacBook Air, the world's thinnest notebook announced by Steve Jobs at CES. In making the machine so sexy and thin, Jobs has had to leave out the fundamental components like inbuilt Wi-Fi and a full 7,200rpm hard disk (it uses an iPod hard disk!), and fit only one USB port. Adding insult to injury, the machine is expected to be twice the price of an equivalent fat MacBook.

At APC, then, the MacBook Air gets a bent pinky. We'd like to hear from you about technologies that you believe deserve to feature in our e-Penis column.



THAT'S WHEN REALITY HIT. IT WASN'T A 'NOTEBOOK', BUT A TOY, WITH A TINY SCREEN, TINY KEYBOARD AND TINY STORAGE

MARCH AWARDS



We reserve the Editor's Choice award for the very best products available on the market.



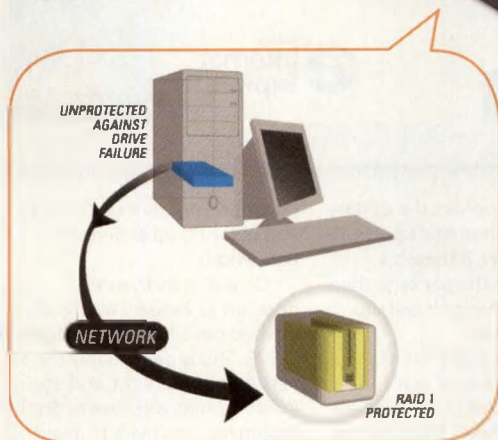
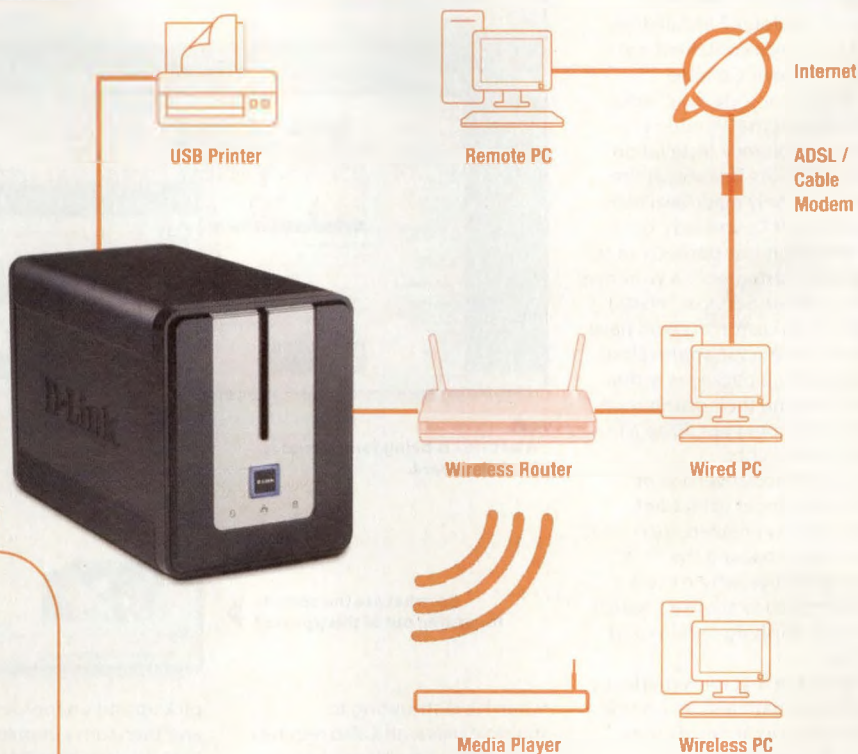
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Microsoft forces IE7 onto business customers

Been avoiding deploying IE7 in your business environment? If you're a WSUS user, Microsoft may force you to comply...

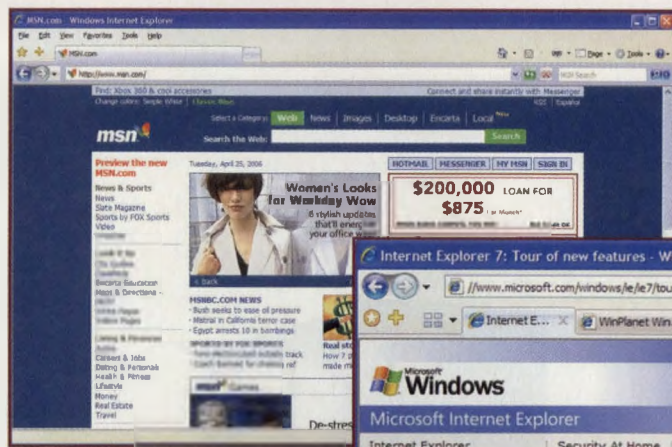
On 4 October 2007, Microsoft released an Internet Explorer 7 installation package which contained no WGA (Windows Genuine Advantage) anti-piracy checks.

Known as the 'Windows Internet Explorer 7 Installation and Availability Update', at the time it was only made available via Microsoft Downloads, but on 12 February it was pushed out to corporate customers via Windows Server Update Services (WSUS).

Business customers who have enabled automatic approvals of Update Rollup packages within WSUS will find their distribution servers pumping out IE7 to all connected clients.

This particular version of IE7 has a number of features automatically enabled, such as the menu bar and the 'first run' experience, where users are prompted to choose a search provider, phishing options and the like.

While the first run experience is relatively harmless on a home computer, we can testify that it's an absolute pain in a corporate environment. Users often don't know which options to select and if you're running a proxy server or firewall with user restrictions, or users have restricted rights to the machine, it's a whole world of pain. Additionally, the IE7 installer requires user interaction, makes any Windows XP machine run like an absolute dog (for a short period), takes up quite a lot of local bandwidth — especially



Aieee! IE7 is being forced onto business users.

So, what are the options for opting out of this update? ➔

when it's distributing to multiple users, and also requires even more security patches post installation.

If you want to update your users to IE7, either use a scripted installation package or build into an SOE — don't use WSUS.

So, what are the options for opting out of this update? Not much, as it happens. WSUS admins who don't want the update to be automatically approved simply have to disable automatic approvals. You can disable automatic approvals temporarily,

pick up and unapprove the update and then turn automatic approvals back on. However, if there's a future update to the package then there's a good chance it will slip through the cracks.

Although it's slightly time-consuming, make sure that automatic approval is disabled on WSUS systems. Apart from having the luxury of checking what's coming through, you can also reject updates not appropriate for your environment, such as those for Itanium platforms. This has the advantage of avoiding

downloading unnecessary files and chewing up expensive bandwidth.

On a slightly friendlier note, on 22 January Microsoft pushed out Silverlight — again via WSUS. This is presumably the 1.0 version of Silverlight, and again WSUS admins will have to disable automatic approvals to avoid picking up the update. At present it isn't clear which WSUS product classification Silverlight will appear in, although it's probably not Update Rollup.

James Bannan



AMD on new quad-core architecture

"We blew it"



Quad-core must be fixed before volume sales can begin.

The troubles continue for AMD's beleaguered quad-core PC processor architecture. But at least now AMD has come clean about the problems affecting both the Phenom desktop and third-generation Opteron quad-core processors.

Speaking at AMD's annual analysts meeting, CEO Hector Ruiz was candid about the company's quad-core failings. "We blew it and we are very humbled by it," Ruiz admitted. As APC has previously reported, AMD's quad-core chips suffer from a whole range of problems, including disappointing frequencies and a conservative architecture. However, the most recent and damaging issue is a hardware bug or erratum that affects part of the interface for the quad-core architecture's L3 cache,

known as the TLB logic. The bug is present in all of AMD's quad-core chips and can lead to data corruption and total system hangs.

Although AMD has released a BIOS-based CPU microcode fix, independent testing has found the fix can reduce performance by over 50 per cent in some applications and by around 15 per cent on average. See below for more on this. Previously, AMD was claiming it was business as usual with its range of quad-core products. Chips were shipping in volume and the bug fix only reduced performance by 10 per cent, AMD told APC in early December last year. However, at the analyst meeting Ruiz conceded that a bug-free revision would be required before AMD could sell its quad-core chips in significant

volumes. AMD expects that its customers will begin shipping systems based on the revised chip towards the end of Q1 2008 or perhaps as late as early Q2.

With AMD's quad-core processors already well over six months late to reach the market, Ruiz said the failure to successfully launch quad-core in 2007 meant AMD had "let down its customers." Despite all the doom and gloom surrounding this, however, there was some good news for the processor company. AMD now reckons it will be ramping up production of its upcoming 45nm die-shrink chips before the end of the first half of this year. As recently as November, an AMD representative told APC not to expect 45nm CPUs much before the end of 2008.

HARDWARE BUG SQUASHES PHENOM

BIOS fix for 'erratum' comes with performance cost.

The troubles continue for AMD's beleaguered quad-core PC processor architecture. Following disappointing launch clockspeeds, it now appears that the BIOS fix for Phenom's so-called hardware erratum can crush the chip's performance by over 50 per cent.

As APC has previously reported, AMD's Quad-core architecture suffers from a circuitry bug or erratum. Both the third-generation Opteron server chip and new Phenom desktop CPU are affected. The problem involves part of the interface for Phenom's 2MB L3 cache memory pool. In certain high-load scenarios, the bug can cause data corruption – and in the worst case, total system lock-ups.

Now an independent investigation conducted by the US web site Tech Report has found that the BIOS-applied CPU microcode patch that AMD has developed can significantly reduce performance. With the BIOS fix applied, the performance of a retail Phenom processor dropped by an average of 14 per cent.

The Tech Report found Phenom's performance falls off by nearly 30 per cent compared to the same processor on an identical motherboard without the patch applied. In Firefox, the patched Phenom plummeted by a shocking 57.1 per cent. As yet, APC has been unable to confirm the accuracy of these tests due to a drought of Phenom chip samples.

But what does AMD have to say? Its position on the implications of the hardware erratum has been fluid. At the original launch event, it initially pointed to the bug as an explanation for the lowly 2.3GHz frequency of the top quad-core Phenom 9600 model. Speaking to APC, AMD described that assertion as 'unfortunate', claiming Phenom's clockspeeds were entirely unrelated to the bug and purely a function of AMD's production yields. Simply put, the company cannot yet produce enough processors capable of speeds beyond 2.3GHz to meet anticipated demand. As for the performance cost, AMD has been more consistent, saying the fix comes at a cost of up to 10 per cent.

THE (A)PC REVOLUTION

March 1992



NEC BROADENS RANGE

NEC made an attack on the portable and notebook markets with the announcement of two new ranges: the UltraLite series and the ProSpeed 486SX/C. The \$10,000 UltraLite SL/25C employs the latest TFT active-matrix technology in its 9.5in VGA LCD panel, which supports 16 colours out of 4,096 at 640 x 460 pixel resolution. It comes standard with an 80MB hard drive and 2MB of memory, expandable to 10MB.

NEW LEASE OF LIFE FOR DBASE

To paraphrase Mark Twain, the reports of dBASE's death are greatly exaggerated. Just because Borland, dBASE's new owner, already has a database product doesn't mean it will put dBASE out to pasture. After all, Borland didn't spend US\$439 million for Ashton-Tate just to acquire a mailing list.

MICROSOFT PRESIDENT FIRED

Bill Gates has fired the president of Microsoft, Michael Hallman, after two years of service. Gates re-examined Microsoft's strategy and "wasn't satisfied" that Hallman was the right person for president. Gates will be replacing Hallman with a three-person presidency, consisting of Michael Maples, software head, Steven Ballmer, OS head, and Francis Gaudette, CFO.



MORE SCREENS OF DEATH

Our item on blue screens of death in January has prompted readers to send in many more, including two international entries.

Cameron Gray was on a Tube station in London when he took a shot of destination sign. The message says: "Your system is running low on virtual memory."

He says if you check out the version date of the software 22/7/2002, it's clear this Windows has not been upgraded in a while, but "given the state of the railway companies in the UK, it is more likely to be the case of dodgy software and a memory leak from the timetabling system."

Fortunately, Cameron's train was in on time.

And in Paris, reader Andrew Smith took this shot of a screen under a big balloon. Luckily, the balloon appears to be a fake one in a shopping strip.



Want to nominate a dumbest moment in tech? Send an email with the subject line "Dumbest Moments" to apcmagazinefeedback@apcmagazines.com.au. All correspondence becomes the property of APC.

Is it all over for HD DVD?

Massive price drops mark the beginning of the end for HD DVD, with Toshiba slashing prices, reports *Dan Warne*.

Toshiba's HD DVD pricing is now as follows: HD-E1 was \$599, now \$299 with four free movies; HD-EP10 was \$799, now \$399 with six free movies; and, HD-XE1 was \$1,299, now \$599 with 11 free movies.

Sharp-eyed readers will notice that the XE1's 11 free movies are worth about \$400 alone, so you could theoretically snag a top-of-the-line HD DVD player for about \$200 under Toshiba's new pricing.

Toshiba's HD DVD players will also upscale your standard DVDs to "near high-definition" quality when you play them back via an HDMI connection, which is a bonus for people who already have HDTVs.

Unfortunately, with most movie studios having announced they will produce movies exclusively for Blu-ray in the future, it seems unlikely that Toshiba's price cuts will win many customers.

Perhaps one exception is people who happen to need a new DVD player anyway and figure they may as well replace it with a cheap HD DVD player and enjoy a few free movies, even if they can't buy many high-def movies in the future.

Currently, the only studios that are still committed to producing HD DVD movies are Universal and Paramount, but the largest producer of home videos, Warner, switched its allegiance to Blu-ray on the eve of the international tech tradeshow, CES Las Vegas. The other studios lined up behind Blu-ray are a formidable barrier for the HD DVD camp to overcome, including Sony, Fox, MGM, Disney and Lions Gate.

Sony is obviously keen to keep the momentum going to the finish line, offering free PlayStation 3s with Bravia XBR, X and W TVs.

However, even Blu-ray is not yet a clear choice for consumers, as

initially produced players may not be able to access special features of Blu-ray movies yet to be released.

Early Blu-ray players were only capable of playing the Blu-ray 1.0 specification; however, the newer 1.1 profile requires secondary audio and video hardware decoders as well as 256MB of storage in the player for content. The future 2.0 profile needs an additional set of hardware decoders (bringing the total up to two video and two audio decoders) for picture-in-picture functionality, along with 1GB of storage for content.

The PS3 is widely regarded as the best Blu-ray player available because of the ease of upgrading its firmware to cope with new Blu-ray movie features, but consumers may still hold off on buying other home theatre Blu-ray players until they are fully Blu-ray 2.0-compliant.

Grab for cash: Toshiba gets desperate as HD DVD support starts crumbling.

THE PERFECT HD DVD OFFER!
GET 5 FREE HD DVDs



e-Penis

What technologies raise your bar and make your mates envious? The better the tech, the bigger the street cred.

Several reasons have already been suggested as to why you'd want a MacBook Air, Apple's new razor thin note-book. When finished with it you can hide it under the carpet for extra security, you can turn it into a trendy silver drinks tray, or you can use it as Frisbee during Friday afternoon office hijinks.

You get the drift. There's a feeling that the MacBook Air's extreme

thinness (ranging from 0.4cm to 1.9cm) is pointless — particularly when you consider the sacrifices that have had to be made to get it to be so thin.

These include: same hard drive as an iPod, which at 4,200rpm is *slooooooow*. It has one, read *one*, USB port, so that means a USB hub, which sort of defeats the purpose of a very thin notebook. It has no on-board wireless broadband, despite

this being the wireless age. But it gets worse: it has no Ethernet port, providing it only as an optional adaptor. And the battery is non-replaceable, so you need to send the entire notebook back to Apple to get the battery replaced.

The Macbook Air is a classic Apple styling exercise without substance — it gets a little bent pinky in our new ePenis column.



CONTACT	Apple
ONLINE	www.apple.com.au
MARKET	Everyone
PRICE	\$2,499 (basic model)

Apple's Air Notebook
small



SMALL



MEDIUM



LARGE

Want to show off your e-penis? If you think a gadget deserves special a mention then send an email describing why to "e-penis" at apcmagazinefeedback@acpmagazines.com.au. All correspondence becomes the property of APC.

Flex screen arrives

Colour and mono screens finally hit the production line ready for a 2008 launch.

The first commercial rollable displays have gone into production thanks to Philips offshoot Polymer Vision. The black and white screens have a bending radius of 0.75cm. While this doesn't mean they'll roll up into a tight tube, it does give them a certain degree of flexibility.

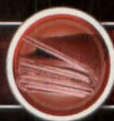
Take the RADIUS, which is set to be the first product to feature the display. If you look at the specification, it's a sincere contender for Amazon's Kindle; it's got everything from 3G communications to an e-ink style screen. The one thing it's lacking is a slab of white plastic holding the unit together. Instead, the flexible screen unfurls from around the main unit, making the RADIUS eminently pocketable while retaining a readable screen. Without testing it we can't vouch for its effectiveness, but it's hard to argue with the design behind it.

Meanwhile, Taiwanese firm ITRI

has revealed the latest product from its labs — an ultra-thin flexible 10.4in colour display that uses plastic substrates in place of an LCD layer. Right now it has drawbacks — the screen can only display 57 per cent of the NTSC colour gamut, and blank patches appear at random — but it's still one of the most promising flexible displays we've

Philips' RADIUS crams a readable ebook display into a tiny space.





The tech that really mattered at CES 2008

From super-green PCs to 150in plasma screens, *Angus Kidman* highlights the pick of the new gadgets from the world's largest consumer electronics showcase.

The annual Consumer Electronics Show always manages to throw up its fair share of surprises.

This year, we had Bill Gates showing off a retirement video that demonstrated that the world's richest man shouldn't move into comedy acting any time soon.

We had Intel managing to overshadow its own announcement of new processors by getting into an ugly war of words with the One Laptop Per Child program.

We even had Bono, Yoko Ono and Slash, though not all at once.

Ultimately, however, the reason everyone hangs out at CES is to check out the coolest new gadgets. From the thousands of products on show, here's a selection of the ones you'll be most likely to lust after (though sadly, experience suggests that not all of them will make it to Australian shores, and many of them aren't due anywhere much until 2010).

THE SCREEN STUFF

Every year's Vegas get-together sees the digital equivalent of genital measurement, as TV manufacturers compete furiously to see who can produce the biggest screen. The clear winner in that category this time around was Panasonic, which showed off a whopping 150in plasma screen dubbed the Life Screen. As Panasonic was quick to point out, that's large enough to display a baby elephant (though with a resolution of 2,000 x 4,000, you wouldn't want close up shots of a panicking pachyderm emptying its bowels). At this rate, next year we'll get the adult elephant-sized screen and everyone will be forced to build bigger lounge rooms.

Arguably sexier and certainly more practical was the first proper-sized OLED TV from Samsung, which offers a more apartment-friendly (but still suitably bloated) 31in screen and a super high-contrast display. Sony showed off prototype

OLED displays at the 2007 show; Samsung seems to be racing ahead with the technology, but even it doesn't expect to commercialise the displays until 2010.

If you can't wait until then to splash out some cash, LG's MultiTouch display — a 52in touchscreen monitor — also attracted attention, although it's largely aimed at commercial and retail applications rather than home users. (We can see some potential though: "So, baby, do you want to come up and check out my 52in touchscreen?" beats "Get your coat" as a pick-up line). Both Alienware and NEC showed off curved double-monitor displays, perfect for gamers or people who live in rotating buildings in Tokyo.

THE GREEN STUFF

Improving energy efficiency was a major theme at CES, although the specifics were perhaps a little vague in many instances. Panasonic used

part of its keynote to promote the idea of reduced emissions, although, from where we stand, you really can't call a 150in monitor an environmentally sound move, especially when you can reputedly only fit one into a plane at a time. Not all screens are quite so evil, of course; Philips, for instance, debuted its Eco TV at the show, a 42in LCD model which reduces backlighting (and hence power consumption) based on program content.

HP pledged to make its PCs 25% more energy-efficient, though it doesn't see that goal actually being achieved until 2010 (clearly a CES we'll need to attend). The main strategies will be improving the efficiency of power supplies and increasing the integration of components onto motherboards — so the machines will be greener, but harder for standalone tech enthusiasts to service.

Another green strategy could be shifting to notebook PCs, which



▲ Samsung hybrid hard drive.



▲ Philips 42in Eco LCD TV.



▲ Eye-Fi 2GB Wireless SD card.

tend to have lower power consumption. One major suckfest element in that plan for most people is the relatively poor storage capacity on most notebooks. Samsung offered up possible salvation in the form of a standard 2.5in notebook drive, the SpinPoint M6, that offers 500GB of storage, neatly spread across three platters. For a desktop, that wouldn't be such a big deal, but for a notebook, it's very impressive. The drive is due for release in March.

THE CLEAN STUFF

Another recurrent theme at CES has been the desire to make use of wireless communications — whether that's Wi-Fi, Bluetooth, 3G or something even more obscure — and banish cables to the ninth layer of hell where they belong. Several vendors showed off wireless HDMI equipment, making it easier to deal with hi-def images without accidentally tangling yourself up.

Possibly the most unusual application of wireless came in the

Eye-Fi, a Wi-Fi-enabled memory card that can automatically upload pictures from a camera or mobile phone onto a PC. OK, not being willing to pull out a memory card or plug in a USB cable is actually the height of laziness, but it's still a pretty nifty idea. You can even set it to automatically send pictures to a social networking or photo-sharing site, though that might not be sensible if you ever take any 'interesting' pictures while semi-naked in a hotel room.

Another useful option for the lazy and partially clothed is the Slacker Portable Player, a Wi-Fi-enabled portable radio which automatically downloads music from your preferred radio stations. It's ad-supported and US-only, but the model looks ripe for exploitation elsewhere in the world.

On a more business-like note, options for improving data access on notebook PCs are also improving. Ericsson demonstrated an embedded HSPA module that should make it easier for PC manufacturers to include bundled wireless broadband (neat, and immediately useful), and ASUS launched a version of its Eee PC that includes WiMax support (neat, though pretty much useless until there's some actual WiMax services in Australia).

THE DEAD STUFF

At CES 2007, nobody could decide if Blu-ray or HD DVD was going to win the hi-def format war, and the end result was that no-one wanted to buy movies or TV shows in either format. However, the announcement by Warner Bros —

a former champion of both rivals which had even worked on plans for dual-format discs carrying movies encoded in both formats — that it was ditching HD DVD, which happened just prior to CES, seems to have tipped the scales.

Warners' announcement quickly had repercussions. A press conference for the HD DVD consortium was cancelled, presumably to avoid hundreds of international journalists all asking: "So just how screwed are you guys?" Even Microsoft conceded that it would release a Blu-ray drive for the Xbox if that's the way the market moved, while new Blu-ray players were very much in evidence. The war isn't quite over yet, but, if CES 2008 is remembered for anything, it might well be as the HD DVD funeral service. Maybe. **ETC**



ANOTHER RECURRENT THEME AT CES HAS BEEN THE DESIRE TO MAKE USE OF WIRELESS COMMUNICATIONS



Deals better than a \$499 Eee PC

ASUS brilliantly marketed the Eee PC as a revolution in portability and price, and it's selling like crazy. But, if you want a cheap notebook rather than a highly portable one, there are much better deals.

The Eee PC has been an unparalleled technology success story. When released in Myer stores in December it flew off the shelves, bought by users who were amazed that a wireless sub-notebook could sell for less than \$500. It was marketed heavily as being ideal for first-timers and school kids, even though many of its customers were going to be techies and geeks who wanted a small, cheap wireless Linux portable.

After APC was one of the first publications to review one and call it amazing, we took one home to work with. And that's when it became obvious that the device had strengths but also plenty of weaknesses. Ironically, chief among its weaknesses was its price. Feature for feature, the Eee PC is not a good deal when compared to the cheapest entry-level notebooks on the market.

The Eee PC's outstanding quality is its portability. With inbuilt Wi-Fi and weighing only 0.92kg, it's great for travelling and staying connected through wireless hotspots, bettering any PDA or exorbitantly expensive UMPCs. But one of its main selling points was its affordability as a notebook, enthusiastically promoted by ASUS as ideal for people wanting a bargain notebook for themselves or their kids.

And this is where the Eee PC doesn't hack it. With its tiny screen, cramped keyboard, insignificant storage and poor battery life, it's

up against proper notebooks costing just \$100 more. But this was probably far from the minds of those who rushed out to buy one with that sub-\$500 price flashing in their eyes.

Henry Lee is Acer senior product manager for retail notebooks. His \$749 Acer Aspire 5315 notebook costs just \$100 more than the Eee PC thanks to Acer's \$149 cash back scheme. The Acer notebook recently won an APC Editor's Choice Award for being a great-value entry-level notebook. For \$100 more than the

to be labelled a bargain notebook suitable for school students?

It all started when the Eee PC was announced by ASUS at the Computex trade show in June last year. This announcement made full use of the publicity that was being generated by the One Laptop Per Child project, a separate program to create a US\$100 laptop for students in the world's developing nations that was driven by Nicholas Negroponte, from the Massachusetts Institute

sell it to the public. One wrote: "Why, why, why, why, why, why WHY????? First it was the Samsung Q1 UMPC that pulled the special release move, and now the word from ASUS is that the Eee PC UMPC will be available by 'special tender' only. I can't begin to describe how pissed I am at these kinds of releases. . . if you can call them releases at all?"

Even APC published a letter from a young reader begging ASUS to make the laptop available to everyone.



BEST OF ALL, THE EEE PC HAS GUARANTEED THAT THE BIG NOTEBOOK PLAYERS WILL BRING TO MARKET EVEN CHEAPER NOTEBOOKS

Eee PC, it's a full notebook with Vista, a hard disk and DVD burner.

Lee comments: "I think there are two different types of consumer, one wants something extremely portable and wireless, weighing under a kilo, and the other type of consumer is looking for something cheap, under \$500. There is nothing else for \$500, so for those that want a small portable laptop, the Eee PC will fit their needs, but for the others looking for a bargain notebook, they'll get a notebook that's harder to use than some of the full-sized notebooks."

The Eee PC is a brilliant little wireless UMPC, but how did it come

of Technology's Media Lab. Part of the excitement generated by the ASUS announcement came from the intended price, US\$199. In Australia, nothing remotely resembling a laptop came even close to this.

Later, ASUS amended this to US\$250. Then, in a marketing masterstroke, ASUS advised that the Eee PC would not be sold via regular channels but mostly to educational institutions via a special 'project tender' basis. This had the effect of generating a groundswell of users peeved that ASUS would not sell it directly to them.

Opinion leaders in the blogosphere pleaded with ASUS to

ASUS then announced it would sell the Eee PC to the general public, with ASUS's MD in Australia Ted Chen saying the company wanted to give everyone a chance to own a PC and take part in the mobile internet experience. The excitement was such that when Myer opened the doors of its Sydney CBD store on December 1, all the Eee PCs in stock were snapped up within a few hours.

But anyone who rushed to buy the Eee PC model PC 701 as a cheap notebook would have been disappointed had they compared their purchase to what else was on the market. Some of the cheap notebook alternatives to the Eee PC



Screen viewing area: 14.1in, 1,280 x 800
120GB hard drive
Full keyboard
DVD burner
Vista OS.



Screen viewing area: 15.4in, 1,280 x 800
80GB hard drive
Full keyboard
DVD burner
Vista OS.



Screen viewing area: 7in, 800 x 480
4GB hard drive
No DVD drive.

are \$100 to \$250 more, but look at the following features for a sense of where the value really lies.

SCREEN SIZE

The Eee PC's screen is Lilliputian, just 7in at a native resolution of 800 x 480. It comes as a disappointment when you realise the 7in screen doesn't fill the 10in screen space that's available on the machine. The 7in screen is surrounded by a black bezel that takes up the spare space. By contrast, a \$600 Acer Aspire 5315 comes with 15.4in WXGA 1,280 x 800 pixel resolution. A Dell Inspiron 1501 (\$699) has a 14.1in 1,280 x 800 display.

KEYBOARD

It's virtually impossible to touch-type on the Eee PC's cramped keyboard. The Acer and other entry-level notebooks from Dell, HP and Toshiba all come with standard, full-size notebook keyboards.

STORAGE

The Eee PC comes with a flash hard

drive of 4GB. In other words, it's a USB key, some of which has to accommodate the Linux OS as well. The Acer Aspire 5315 has an 80GB hard drive. Like all drives in this budget category, it's not the fastest (5,400rpm) but it's more than enough for everyday computing. The Dell Inspiron 1501 has a 120GB hard drive.

OPTICAL DRIVES

If you want to play an educational DVD or CD, the Eee PC can't help you. It doesn't have an optical drive. The Acer Aspire 5315, the Dell Inspiron 1501 and Compaq Presario C700 (\$799) have burners with DVD DVD+/-RW and DVD+R double-layer write capability.

BATTERY LIFE

Given its small size and flash drive, we really expected the Eee PC's battery to last several hours. So we were disappointed when the little machine ran out of puff after three hours, putting it on par with the big Acer Aspire 5315, which powers a

massively bigger screen, hard disk and a Vista OS.

MEMORY

The Eee PC 701 4G released in Australia comes with 512MB, the same as the Acer Aspire 5315 and Compaq Presario C700. But the Acer and Compaq's memory can be upgraded to 2GB. The Dell Inspiron 1501 comes with 1GB of standard memory upgradable to 2GB.

CPU

The Eee PC has a similar low-power Pentium M CPU to the Acer Aspire 5315 and the Dell 1501's AMD Sempron. But, in terms of value, the next model up from the Dell 1501, the Dell Inspiron 1525 (\$749), gives you an Intel 1.60Ghz dual-core T2330 processor.

CONNECTIVITY

The Eee PC's great strength is that it has an Ethernet port and on-board wireless — but so do the others. They also have an internal modem for connecting

via a telephone line. The Eee PC doesn't have one.

PRICE

It may be cheaper than the others at \$499, but the Eee PC can't play DVDs or CDs, has a 4GB drive, no onboard modem, and has a screen that's only 7in. If you want true notebook bargains, then the Acer Aspire 5315 (\$600 with \$149 cash back), the Dell Inspiron 1501 (\$699) and 1525 (\$749 — with dual-core CPU) and the HP Compaq Presario C700 series (\$799) are much, much better value.

Best of all, the Eee PC has almost guaranteed that the big notebook players will bring to market cheaper notebooks. Dell Australia and New Zealand's general manager for consumer notebooks, Evan Williams, says: "I think that Dell will continue to address all the different types of needs, and if there is an emerging trend that people want to use a device for communications and limited productivity, we will make sure we provide the best value there in the mainstream space." **apc**



Gaming on Vista?

The gaming industry has traditionally set the pace in hardware development, so what impact has Vista had on gamers' demands for ever-increasing performance?

The gaming industry has long been at the forefront of cutting-edge desktop performance, in both hardware and software. Gaming machines often resemble futuristic space-age consoles with enough grunt to take pride of place in any corporate server room. But although gamers are often keen to play with the latest and greatest hardware in a never-ending quest for that extra edge in performance, one area where they're less keen to experiment is with software, and particularly with operating systems.

Why is this? Mostly because software can have either a massively deleterious or incredibly positive impact on system performance. If you've spent thousands on a high-end gaming rig you really don't want a dodgy software driver bringing your hardware to a grinding halt. And it does happen — Windows' performance is generally only as good as the hardware it's running on, and drivers are the key. Vendors are constantly re-working their drivers to deliver the best performance. And yet, beyond that, every conceivable aspect to an operating system can have an effect: page file, fonts, networking settings, disk fragmentation and colour themes. Gamers spent years

perfecting Windows XP, stripping it back to its absolute essentials and tweaking it beyond all recognition. And then Vista came along.

Gamers have reacted with quite a deal of caution to Vista. There are two principal reasons for this — Vista's increased resource requirements, which essentially means that there are fewer resources to go around, and the total and massive reworking of the underlying operating system. During Vista's beta period, many gamers were disparaging of the prospect of running games under Vista. Although compatibility didn't seem to be much of a problem (which has proved to be the case long-term), performance and particularly graphics frame rates took a hit, which many users found unacceptable.

Many of Vista's early performance problems were caused by ill-prepared vendor drivers, and over time these have matured to enhance performance, system stability and feature sets. Windows XP does sometimes have a slight edge over Vista in some gaming scenarios, but the momentum behind Vista as a next-gen gaming platform is increasing in intensity, and there are some compelling reasons to make the change.

WHY VISTA?

Windows Vista is the only operating system to support DirectX 10 — the latest version of Microsoft's suite of tools that handle 3D graphics and effects. Vista Service Pack 1 will feature a version upgrade to DirectX 10.1. There are quite a few game titles on the market that support DirectX 10, like Unreal Tournament 2007 and Eve Online, as well as some big-name games which have been designed around DirectX 10 and therefore only run on Windows Vista, like Crysis, Hellgate: London and BioShock.

Additionally, Microsoft has extended the Windows LIVE gaming system to Windows Vista, which means that gamers can play against each other on games released for both Xbox 360 and Vista platforms, and Vista users can sign into their LIVE accounts, have their achievements registered and gamer score updated.

Finally, one of the most serious considerations relates to something we raised in last month's issue — 64-bit computing. Under Windows XP, 64-bit computing is quite a specialist activity. It works

well but has limited application, especially for home users and even more so for gamers. However, with Vista making 64-bit computing increasingly accessible, many users are discovering the benefits of gaming on a 64-bit platform.

There aren't any dedicated 64-bit game titles on the market yet, but, given the increasingly attractive pricing on high-end memory and robust vendor support, it's only a matter of time. **APC**

Gamers have so far treaded warily when it comes to the new OS...

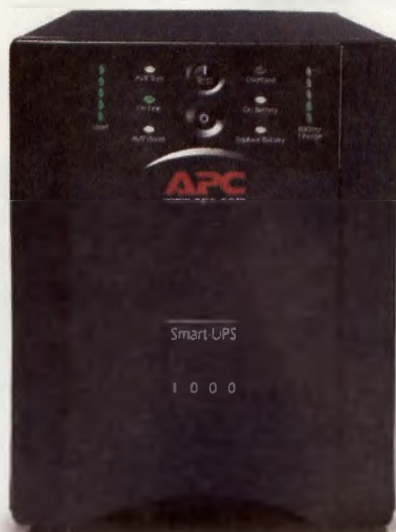


HastalaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.

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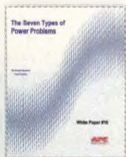
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Optimal builds

Ensuring you've got an optimised build isn't absolutely necessary all of the time, but the performance benefits are more than just real — they're noticeable.

One of the advantages of having source code freely available is the ability to compile a program for a given platform — the kernel, for example, can not only be tailored for everything from desktops and servers through to PDAs, but even its final configuration can be compiled with optimisations for a given architecture — CPU optimisations for the latest processors, space-saving optimisations for low-memory portable devices and more.

Despite the fact that some distributions provide stock i386 binaries, and sometimes generic x86_64 binaries, they are — overall — unoptimised. They need to be, in order to run on the widest possible hardware. But this means that programs aren't necessarily as efficient as they could be for a given platform.

This is one of the design elements of source-based distributions like Gentoo — compiling an entire distribution for your specific requirements and hardware configuration. Of course, at the same time, there's a modicum of effort involved in manually compiling every program, and then doing it again as updates are released.



Opting for the best desktop: it's a mistake to dismiss optimised builds.

Most of the time the benefits are negligible. Some programs most certainly benefit from being optimised for an architecture, but these are the exception and not the rule. I run both a Gentoo and Ubuntu boot, and let's be clear — my Gentoo boot is the fastest operating system I've ever used. From booting up, to starting programs, to responsiveness — nothing comes close. The Ubuntu boot is faster than Windows, and Gentoo is faster than Ubuntu. But what price speed?

It takes a few hours to install the latest Gnome desktop on Gentoo, or a few minutes on Ubuntu, and ultimately when you actually use your desktop you're not going to actively notice the speed differences. Although the ricer within me is loathe to say it, the pay-off for Gentoo ultimately isn't worth it.

But that's not the same as saying optimising isn't. On my Ubuntu boot I run a customised and architecture-optimised kernel — this is one area where you can invest time in optimising for your hardware and gain a significant benefit, and you only have to invest the time here once to reap the benefits across the board. Ubuntu with an optimised kernel is noticeably faster in everything it does, even if all the other applications are made for the mainstream.

For now I'm using a kernel build called Zen-sources, along with some optimised CFLAGS. If you haven't so far explored compiling your own kernel, check out Zen-sources (<http://forums.gentoo.org/viewtopic-t-641834.html>). There's even an Ubuntu port (see <http://ubuntuforums.org/showthread.php?t=623874>).

There are a few other applications where you can see a real benefit from optimising the builds — and, funnily enough, Firefox is one. You wouldn't think that the browsing experience necessarily needs to be a fast one, but as Swiftweasel (an optimised build of Firefox — <http://swiftweasel.tuxfamily.org>) shows, once you use an optimised build you just can't go back. Swiftweasel loads and renders pages faster than Firefox, and is more responsive to boot. It's not a small difference, either (run both side-by-side).

Part of Swiftfox's optimisations are network toggles which you can actually make with Firefox, but a large part of it is optimised build-configuration — when you download Swiftweasel you can download a version specific for your CPU, and there are versions for all manner of Intel and AMD processors.

So while it's probably not worth your time and effort to compile everything from source, even if it yields the most responsive desktop you can get for Linux, as with Gentoo, it'd be a mistake to dismiss optimised builds altogether — simply using an optimised kernel can make all the difference no matter which distribution you use, and compiling specific programs with optimisations for your hardware can yield real benefits. You may not need your word processor to be fly, but virtualisation software (and Wine) are prime candidates. And if you haven't so far checked out Swiftweasel, give it a go. [ATC](#)



LinuxWindow

by
Ashton Mills

Editor of the Linux Pocketbooks series, and now with CHOICE magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



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Gone to the dogs

End users don't always take it lying down; sometimes (just sometimes) they and their mates can be quite scary.

Some end users don't easily accept software failures (and make this graphically clear to software vendors). John Smith*, from Queensland, bought Microsoft Flight Sim X Deluxe Edition for his ultra-powerful AMD-based rig (which runs so hot it has a dedicated wall-mounted air conditioning unit). He says: "So much for trouble-free installation. It took me four and a half hours to install, and then it failed. After I trawled through the MS fix site it eventually ran. It was then running at full noise until it got to the Piper Cub section and the engine fell off and lost hydraulics (no sound and the joystick stopped altogether). I flew into the blue screen of death numerous times, claiming my GFX card had died, but I tested it on 3D Mark2001SE and it was fine.

"Now, if I have to agree to the EULA, I should expect that the product is fully tested and works. I feel that the people at Microdribble are waiting for me to send the error reports so that they can fix the thing. So they're basically sacrificing quality for release date pressures."

But John has a chilling warning for Bill Gates. "As for Captain Bill, he better shape up and fly right cause



my 'mates' are not real impressed with the bastard either. Meet Dozer and Swampy. Right now they're wishing the disc (pictured) was Bill's arse." John points out his "mates" are a cross between a Bull Arab (bred for hunting feral pigs in Southern Queensland) and a Bull

Mastiff (originally bred in England to find and immobilise game poachers). Dozer weighs 70kg and Swampy 65kg — not the kind of cross-breeds Bill would want to put off side.

[note*: real name withheld on request]

Arf arf: one reader thinks Microsoft's flight sim is arf-baked...



EndUser

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.



SCREEN COLOUR

Joshua Riesenweber from Alberton, Queensland, and his friend Steve were about to go pick up some computer components for their company when a user asked them to purchase a new monitor for him. "We told him this was fine and asked if he had a colour preference, black or beige," Riesenweber says. "The guy sat pondering this for a full minute — we were thinking that he took his decor very seriously — and finally, the guy looks up and says, totally seriously, 'Well, if it's not too much trouble, I'd like to get one that shows colour too.'"

CHAIN SMOKER

Paul Hawkins, from Emu Plains, NSW, has a chain-smoking client that keeps destroying his PCs with smoke and nicotine. "I have told him never smoke anywhere near the computer, not even in the house, but he just doesn't listen," says Hawkins. His customer has churned through three PCs in three years. "When I was called in to fix the first PC, I opened it and found it full of dust, the IDE cables were a brown/yellow and his video card was stuffed. I replaced it but a year

later he blew the motherboard, which was a slight tinge of yellow from nicotine and covered in dust balls. Something similar happened to the second PC, and now, with his third and latest, the CPU fan and heat sink are again blocked with dust and the IDE cables yellow again. He also has another stuffed motherboard (or a dead CPU). I told him he needs a new motherboard or even better, a new PC. He said he can't afford a new PC. I told him then he should not have smoked near the PC... and if he quit, then he could afford it!"

SATELLITE HACKING

Brodie Downes, a sales consultant in Perth, tells of a customer who claimed that his laptop (which was used standalone, without a net connection) had been hacked. When someone at the IT store asked how this was possible considering that a completely disconnected unit can't be hacked, the customer responded with: "Don't you know anything? They hacked it using the Google Earth satellites." Just as we thought, more evidence that Google can no longer be trusted.

Hmmmm. Decisions, decisions. Will my presentations look better in black or beige...? Maybe I should find out if they sell these in other colours as well...

OUTLOOK INBOX MYSTERY

APC reader Toby Smith works in tech support in Tokyo and was dealing with end user fallout from a mail server upgrade which presented users with a new Outlook Web Access GUI. He got the following email: "I am having trouble with the Outlook account: it seems that since the view was changed all emails before then were lost from my inbox. It says that I have 92 emails in my inbox but only shows about 40 in the view. Then I went through the 40 emails and opened the inbox again, and this time it said 65! I don't know what it will say next time?" The dumb user was looking at the number of unopened emails that's listed next to the inbox icon in the Outlook Mail folders column. These can exceed those immediately visible in the inbox. And once an email is opened, the total number of unread emails drops by one! Not rocket science but too much for this user.

PRINTING DIFFICULTIES

If you think there's many end user horror stories now, it was worse when the PC revolution was in its infancy. Gabrielle Baker used to work at a major Australian newspaper in the 1980s and recalls an old-school finance manager. She says: "He did not know how to print, and did not think to ask anybody how to do it. His methodology was to bring the relevant information up on screen, then phone downstairs to the newspaper photographers to come up and take a photograph of his computer screen." **APC**

PRACTICAL JOKE



APC reader Stuart McCormack invents his own computer practical jokes. This one involving a mouse is sure to drive your dumb victim crazy and get you a new mouse if you need one.

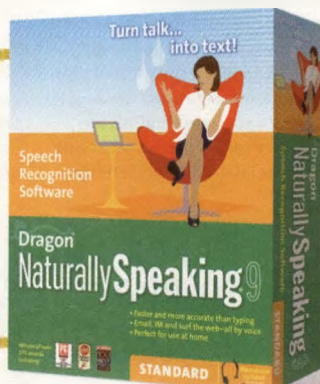
1. Unroll about 2 cm of sticky tape.
2. With a red marking pen, colour in about 0.6 cm square of the sticky side.
3. Carefully cut out the coloured-in bit.
4. Stick the cut-out over the lens of the mouse.
5. Make tutting noises when the owner discovers his mouse is installed perfectly but doesn't work at all.
6. Rescue the mouse after the owner (or IT) bins it.
7. Remove the sticky tape and install the mouse on your PC.
8. When asked, "Is that thing working now?" reply with, "Well, the problem's still intermittent."
9. Enjoy your sexy new mouse.

APC does not condone taking other people's mouses by subterfuge. We recommend you give the mouse back and have a laugh with your victim.

WINNERS!

This month's published End User writers win Dragon NaturallySpeaking Standard 9 voice recognition software. This has a free, high-quality headset microphone with noise-cancelling technology. So, no more typing — use the world's best-selling speech recognition software to create letters and reports faster than typing. Just use your voice to dictate and edit in just about any Windows-based application, including Microsoft Word, Microsoft Outlook Express and Microsoft Internet Explorer.

Dragon Naturally Speaking Standard 9 is valued at \$199.95 Inc GST.



SEND US YOUR CONTRIBUTION AND WIN A PRIZE!

Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@acpmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.



eBay or eDelay?

When a paid-for PDA never shows up, one reader accuses eBay and PayPal of delaying tactics.

On 8 August 2007 I won an eBay high bid on a PDA with GPS for \$380. I paid with PayPal and qualified for full protection of my payment. My seller delayed me repeatedly until I visited that seller's feedback to discover that within the past month they had turned into a fraud factory and were ripping everyone off.

Immediately I turned to eBay for help and filed a complaint for "Item Not Received" and waited an additional 10 days for the resolution to be settled in my favour, since the seller had ripped everyone off. I was surprised that after giving the seller 10 days to respond (in which she didn't), eBay agreed with me that they were a lousy seller — no refund.

eBay owns PayPal — I thought that they would have combined forces, but no — PayPal requires you to file a *separate* complaint and again give the seller 10 days to respond. It appears that I had been delayed by eBay long enough to push me over the 45-day limit that PayPal uses to free themselves of all 'Buyer Protection' responsibilities.

Initially, my complaint was dismissed the first day I filed it because I was later than the 45-day limit. I called to complain because I was hindered by eBay's resolution procedures — and they agreed to reopen my case. I waited 10 days for a response from the seller and they replied by telling me that the complaint was decided in my favour and that they were unable to recover any funds from the seller.

I called to ask when I would receive my money, because in Point 3 of the "Buyer Complaint Policy and PayPal Buyer Protection Policy" they state that: "If PayPal is unable to recover your payment from the seller, PayPal will pay you the maximum amount of coverage for

which your transaction qualifies." My transaction complies with "Basic Tier" coverage (up to \$400) except in the one point that I registered my complaint after the 45-day limit — again, due to eBay's 'stalling' procedures of conflict resolution.

I want my money back and I want eBay and PayPal to unite to provide a service that does not exploit the faithful, reliable credit card customers who make both eBay and PayPal successful.

Don Modarelli
Green Valley, NSW

Watchdog passed Don's accusations onto eBay, who provided APC with the following response:

Dear Watchdog,

The overwhelming majority of transactions on eBay are trouble-free. In the rare instance where things go wrong between a buyer and seller, I can assure you that eBay investigates matters brought to its attention and has systems in place to assist them resolve disputes.

If something does go wrong and the buyer and seller are not able to resolve the issue through communication, the buyer should lodge a dispute via the eBay Dispute Resolution centre promptly. In order to make a claim for PayPal Buyer Protection, a dispute needs to be lodged within 45 calendar days of the date the payment was made.

The three key things to remember when shopping on eBay:

1. Get to know your seller: review the seller's feedback — this is their online reputation. Check item descriptions and pictures closely and ask the seller a question if you need more information.

2. Pay safe, use PayPal: an online payment service that keeps your financial details hidden from



If something's up with your eBay item not arriving, don't hesitate to start the Dispute Resolution process.

your trading partner. PayPal buyer protection can also cover you up to \$3,000 if your item does not arrive or is significantly not as described.

3. Follow the safe trading guidelines: read and follow the safe trading guidelines located in the security centre on eBay.com.au.

Alastair MacGibbon
Director Trust & Safety
eBay Australia & New Zealand

Watchdog also spoke with eBay spokesperson Daniel Feiler, who reiterated the importance of commencing the online dispute resolution process as soon as you

suspect something is up with your item not arriving. eBay's response clearly indicates the company believes ample time is provided within its dispute resolution procedures to protect buyers — provided buyers themselves act to protect their own interests in a prompt and cautious manner. In this case, Don eventually did receive a \$380 credit refund to his PayPal account, but when APC asked eBay to explain how this had occurred, we received no response.

Watchdog's take: the majority of sellers on eBay are legit, but your only way of gauging this is by checking out your seller and their feedback **before** you do any bidding. With eBay, the onus really is on the customer to ensure everything seems above board and to act as promptly as possible to keep covered and within any time limits that eBay or PayPal stipulate.



I WANT MY MONEY BACK AND I WANT EBAY AND PAYPAL TO UNITE TO PROVIDE A SERVICE THAT DOES NOT EXPLOIT FAITHFUL CUSTOMERS



AN UPSIDE TO THE DOWNGRADE?

Tom Perkins of Maroochyodora, Queensland, wrote into APC, asking ruefully: "Has anybody out there had the misfortune to attempt the Microsoft Vista Business 'downgrade' to XP Pro? I have and it has not been resolved, nor has it been a pleasant experience." After receiving several instances of conflicting advice from Microsoft support on how to migrate his legal, activated copy of XP Pro (on his PC) and install it onto his new ASUS laptop (replacing Vista Business), John started worrying about the legalities of his position: "Better get on to Microsoft and sort this out, as I was unaware that this was legal: I thought the EULA says one machine, one install." A Microsoft spokesperson told APC: "If the

customer decides to downgrade, they can use one legal version of the downgrade media for multiple installations. The end customer does not need to have one set of Windows XP Professional media for each PC they are downgrading because they have acquired legitimate full operating system licences for Windows Vista Business, which gave them the right to downgrade. The customer can run Windows XP Professional until they are ready to upgrade the system to Windows Vista Business — and at that time they would already be licensed for the Windows Vista Business they purchased with this new machine.

"When a customer is using their downgrade rights offered under the Licence Terms in Windows Vista

Business and Ultimate versions and they use both Windows XP media and a product key that was previously activated, they will fail activation due to the hardware configuration change when installing on the Vista system. In these cases the end user will be prompted to call the Activation Support Line and explain their circumstances to the Customer Service Representative. Once it is determined that the end user has a valid Vista Business or Ultimate licence, the Customer Service Representative will help them activate their software."

In the end, it was all too much trouble for Tom, who did eventually receive a product key for his laptop but decided he'd rather "load up Linux and get back to a happy place using computers!!!"



SCREENING COMPLAINTS AND THE DAMAGE DONE

I recently read your article on Matt and his trouble with his cracked screen not being under warranty (APC November 2007, page 23). I have come across this exact same circumstance with my LG Shine phone. The LCD screen appeared with a crack on it, with no outer damage showing. I took it into my local dealer and they provided me with the following option: because my phone was covered under insurance and warranty, they sent it off to LG. A month later after I followed this up, only then did I find out that it would cost me \$100 to have the phone repaired because "physical damages are not covered under the warranty". I find it hard to believe that circumstances like this, that are out of the customer's control, come back to bite us when all we want are products that are reliable and trustworthy.

Brad Mathieson
Surrey Hills, Vic

Watchdog contacted LG to see what it had to say about Brad's screen issue.

Dear Watchdog,

LG welcomes feedback from its customers and appreciates the opportunity to respond to Mr Mathieson's letter.

LG products are manufactured under strict quality controls, and failures due to manufacturing faults are rare. If they do occur, they are most likely to fall within the specified warranty period.

As Mr Mathieson discussed with LG and was advised by staff at the Vodafone store he visited, a cracked screen is considered to be "physical damage" and therefore is not covered under LG's warranty terms and conditions. Please see below for the section of the warranty that relates to this matter:

1. WHAT THIS WARRANTY DOES NOT COVER...

... (12) Defects or damage resulting from breakage of or tampering with the LCD screen...

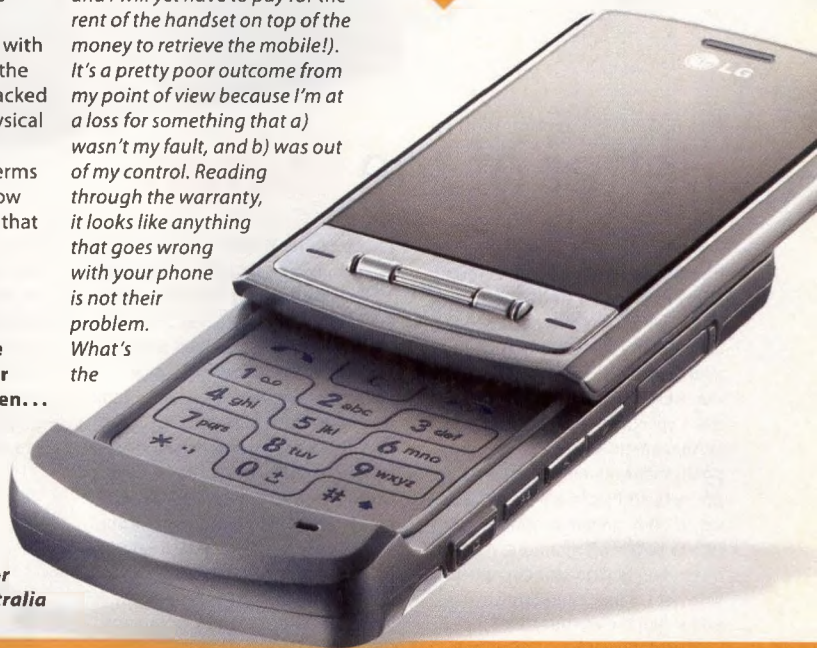
LG values its customers and encourages customers with any concerns to contact LG directly.

Tony Chambers
CIC Supervisor
LG Electronics Australia

Brad wasn't too impressed with LG's response: "Unfortunately, in the end it looks like I'm going to have to cough up the money which I still don't think is acceptable. LG could not offer any sort of compensation (the fact I've not had my phone for over a month and I will yet have to pay for the rent of the handset on top of the money to retrieve the mobile!). It's a pretty poor outcome from my point of view because I'm at a loss for something that a) wasn't my fault, and b) was out of my control. Reading through the warranty, it looks like anything that goes wrong with your phone is not their problem. What's the

point of having a warranty on a phone or taking out insurance when anything that happens to it isn't covered anyway?"

Screen issues not being covered under warranty took the 'Shine' off Brad's experience with LG.



watchdog@acpmagazines.com.au

Has an IT vendor or telco stuffed you around? Let us know about it and we'll chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, street address, suburb, state and phone number to be considered for print publication (please also include details such as invoice numbers and people you've spoken to). Address and phone details will not be published. All correspondence becomes the property of APC and is subject to editing.

Locals are competitive

A reader debate over local PC builders kicks off this month's swag of Epinions.

Local vs brand power:
who is the strongest?



LOCALS JUST AS GOOD

I disagree with Brad Coates' views about local PC builders (APC January, page 22). I believe that local vendors offer significantly better-priced systems and are competitive. The reason they don't get as many sales as some big foreign players is a lack of exposure. I think it would be good if APC did

more to promote local builders by benchmarking local systems against those by bigger brands. In a specific price range, it has been my experience that PCs from local vendors will outperform an equivalently priced PC from a vendor such as Dell.

While using a big-brand vendor for a business PC makes sense for the superior customer support options,

for a home-user, it makes sense to buy from a local builder. I personally bought a system from a local vendor in late 2006 with a two-year warranty. Within about a week, I had a problem which I put down to the RAM. I took the PC to the vendor and left it with them for an hour. When I picked up the PC, the memory had been replaced and I have had no further problems. The system also came at the right price — a system based on an E6600/7600GT combo with 1GB RAM and a mid-range Intel motherboard was great for \$1,250 in December 2006.

Daniel Bergamin
Quakers Hill, NSW

LOCALS CAN'T COMPETE

Brad Coates bemoans the Goliaths not having any competition from any local David. One just has to see the prices for quad-core PCs from Dell and Acer, for example, and it's hard to see how a local could field a comparable system at an equal or cheaper price. It's called 'supply chain'. The Goliaths have an advantage in the leverage they can

letter of the month

GREEN COMPUTING

Recently I attended a presentation about Microsoft's Windows Server 2008. What caught my attention amongst the hype was the company's improvements for power management that were built into the new platform, more specifically the ability for system administrators to enforce power management settings via group policy to all PCs in a network. This would allow administrators to force PCs to power-off monitors, hard drives and go into standby sooner when not in use, therefore saving power and the environment.

Not deterred by the fact that power management at a network-wide level was not built into 2003 Server, I turned to Google for advice. I soon discovered the US EPA has developed a freely available tool called EZ GPO which basically is an Active Directory

template for Windows 2003 which will define power management settings to a small executable installed on every client PC in the network. So in reality, the ability for centralised power management across a Windows network is already available without the wait for Windows Server 2008.

There are other initiatives worth implementing such as Virtualisation technology to reduce the physical number of machines or purchasing more energy-efficient hardware like WD's more energy-efficient drives.

But that said it should not be left to just IT professionals to turn our keyboards green. There are everyday things anyone can do to reduce energy consumption like simply powering off your PC at the wall when not in use, recycling printer cartridges or even just making the effort to print less documents or printing to both

sides of the paper. These small things can make a huge difference. There is an absolute plethora of information available to make IT greener: Google it! In reality it is within our collective reach to reduce energy consumption and the environmental impact by simply being conscious about how we use our beloved IT.

Gus Campbell
Craigmore, SA

Gus wins this issue's Letter of the Month prize, a Logitech Cordless Desktop MX 3200 Laser keyboard and mouse set valued at \$199.95.





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Boradband: what the?!

exert on their suppliers based on the number of units they purchase. This can't really be matched by any local manufacturer or vendor. I feel more comfortable buying a PC with Dell, IBM, HP, Acer on the case rather than 'Harry's PC'. I've already had one bad experience too many when buying a PC from a local builder.

Gene Bagdonas
Canberra, ACT

BUILD YOUR OWN

As a user who constantly upgrades his computer with the latest hardware, I have a few concerns with Brad Coates' letter of the month last month. Personally I'd choose to build my own computer instead of buying a pre-made one. With such a huge range of components on the market these days and a dozen brands for each product, plus the increasing use of price comparison sites such as staticCE and twenga, 90 per cent of the time the typical user looking to upgrade their PC is going to go for the cheapest prices resulting in a well-priced system. If a local retailer wants to sell me full PC systems, maybe they should think about lowering their

Buy big-brand or build your own?
What's the best course of action?

prices a bit. They would certainly get my business.

Joshua Michielsens
Canning Vale, WA

BORADBAND

It is pleasing to see that Telstra is staying at the forefront of new technological advances by being the first ITC Company in Australia to introduce 'Boradband' which, as we all know, is the latest incarnation of the highly touted Boratband, Kazakhstan's camel-powered broadband service. See here for the latest info supplied by Telstra (<http://my.bigpond.com/internetplans/whatisbroadband/#option>). Note the Page Title.

Jeffrey Holmes
Cairns, Qld



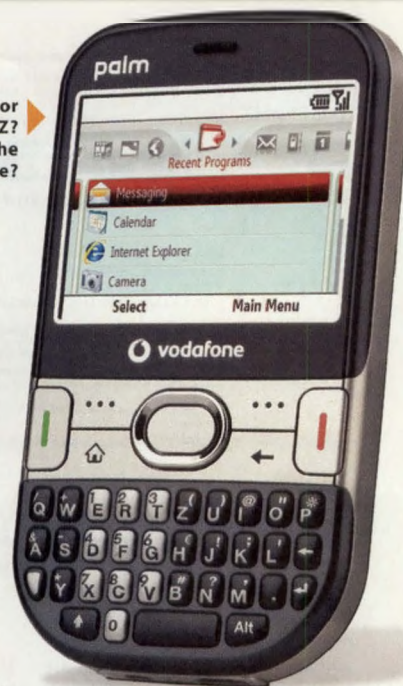
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QWERTY or QWERTZ? What's the deal here?

If MS can't guarantee compatibility with Vista, then who on Earth can?



comprehensive blacklist, I feel that the department is taking the easy route by using the white list. I was trying to point out that the filtering system in NSW schools is going too far under the name of 'protection', like the proposed ISP filter by the Labor Government. I'm sure people like Glen will be pleased if they used the DET filters, as it is great in 'protecting' children by filtering out most of the internet. Of course, this won't work. What the governments should understand is that there will be indeed risks involved in using the internet, but there are risks involved in life.

Reasonable censorship at school, and, most importantly, education will help the most. Just like driver education at school. Lastly, neither I, nor the statistics from the RTA (in NSW) agree that the bulk of the deaths on the road are young drivers between 17 and 25, or that they are the reason for RBTs and speed cameras.

ChengZhe Wu
Armidale, NSW

NOT COMPATIBLE

I had to laugh when I recently purchased a brand-new, Vista-guaranteed Microsoft Natural Ergonomic 4000 keyboard. These keyboards are far from cheap. It had a Vista-guaranteed sticker on the box and it was made by Microsoft, so I assumed it would definitely be compatible with Vista. I installed the software first from the CD supplied only to be

shown a screen warning of a "compatibility issue between Windows Vista and this version of Intellitype Pro. This program was created by Microsoft. An update is available that solves this problem." I downloaded the newer software and the keyboard works fine with Vista. However, with all the finger pointing Microsoft is doing to other hardware manufacturers why can't they get it right themselves? You can only laugh. Oh, and our companies will be waiting another 12 months at least until I will assess whether Vista is ready for business. Until then, all new PCs and POS terminals will be loaded with XP.

Shaun Gamble
Brisbane, Qld

WINDOWS REACTIVATION MADNESS

I am a Windows XP user. I recently booted my PC and was greeted with a message stating that I had to re-activate Windows because I had made "too many hardware changes" and I had three days in which to do it. I take offence at being told that my legal, paid-for software, is going to be hobbled for no justified reason, other than Microsoft's bodgie software and incompetence. It would appear that installing an Ethernet card two months ago for my broadband router constituted a lot of hardware changes, because nothing else was changed since Windows XP Home was installed.

After a couple of years it's possible that a user might not be able to find the original jacket with the product code, so what are you supposed to do? Of course trying to contact someone at Microsoft by phone to get this issue dealt with was just about impossible; I tried three times to contact Microsoft only to get a bad line and someone in Malaysia who could barely be understood. This of course is totally intolerable and is further proof of the arrogance and incompetence you get when you have a monopoly. I can only assume that this has occurred because of a bodgie update, which Microsoft won't take any responsibility for. People really need to wake up and teach this company a lesson, because nobody, no matter how big they are, should get away with this behaviour.

Tony Joyce
Macquarie Fields, NSW

OR ADD RAM

I changed my hardware by adding RAM to my Vista PC and it required expensive re-activation. I will not purchase Vista again. I am not too happy as I move hardware around regularly to try and improve speed.

Leigh Brown
Canterbury, Vic

NAKED DSL

Your article on iiNet's Naked DSL (APC January, page 69) gave it a glowing review. It reminded me of the reviews given to VoIP when it

became mainstream for home users. Nobody considered the downsides of power outages with VoIP, specifically the ability to make emergency phone calls and for the operator to locate you. Vendors eventually allowed a pass through on their equipment so the normal phone worked during an outage (power or DSL). These same issues apply to Naked DSL, and it would be beneficial if you pointed this out to mum and dad users before they start disconnecting their landlines to save a few dollars. One last point, tell me how good the VoIP is going to be on these plans when users reach their quotas and are scaled back to 64Kbit/s?

Also, I know you guys use your own staff in magazine shots. If the girl on page 21 of APC January works at APC, can I get a job there? Hubba hubba, you guys are lucky buggers.

Mark Cavanough
Wattle Grove, NSW

QWERTZ

I have just read the review on the Palm Treo 500v (APC January, page 43) and noticed that in the article it stated that the keyboard was a qwerty layout one, while in the picture it is a qwertz (the 'y' and the 'z' being swapped) — is this an error in publishing or have Palm truly messed up on this?

John Hodge
Subiaco, WA

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This month in Labs... Going green

2 008 is already shaping up as a very green year. January's Consumer Electronics Show in the US showed a wide variety of green-marketed goods. Green is the new buzzword, and, beyond retail shelved boxes, even PC components are seeing an environmental change. For example, take Gigabyte's new range of energy-saving motherboards which shut down power routes when not in use, thus conserving electricity. That's all well and good, and I can't fault a company for thinking about how we consume electricity, but, in context, a low-power-consumption motherboard is a really small part of the problem and isn't hard to fix.

Taking a step back from the day to day nuts and bolts of

motherboards, CPUs and network gear, it's interesting to see where higher tech trickles into consumer hands. Things like Gigabit Ethernet were serious data centre material a while back; blade servers are ending up in small business; and, most importantly, low-power devices are ending up in people's desktops. High-end networks, data centres in particular, have been green for a lot longer than we realise. Though we didn't think of it that way — saving power and higher efficiency in that environment is all about saving money in cooling and electricity bills. Combining the two realities — the cost and energy savings with the increasing importance of reducing our environmental footprint — we might really get somewhere.

If a PC consumes around 150W as an average, shaving a few watts from one of the components isn't a huge saving for a home user (a business with 2,000 desktop PCs might see it a different way). Personally, there's been a bit of a change at my house. As a good geek, I run a number of PCs: my main system, a test bed for some after-hours tinkering, another full-sized PC used as a server and a notebook or two for good measure. It used to be I never turned them off — walking into the study on a hot day would be like stepping into the tropics. I've turned it around: I built a small form factor, low-heat server; I installed a test version of Windows Home Server and added a port of uTorrent for the platform. It means now that all my media is available,

just as it used to be, but I can turn off my power-hungry systems when they're not in use. The only sacrifice I feel I've made is the wait of 25-30 seconds it takes to boot up my PC or test bed. I can live with that, and I'm looking forward to my next energy bill, to see if there are some tangible savings. I'll keep you posted. [RIG](#)



IT USED TO BE I NEVER TURNED THEM OFF —
WALKING INTO THE STUDY ON A HOT DAY WOULD
BE LIKE STEPPING INTO THE TROPICS

NICK RACE — TECHNICAL EDITOR

Geek

**SUPERFAST RAM**

One of the many souping up tricks for PCs is to replace standard RAM with memory with a much higher clock speed. Apogee claims its new GT DDR3 2000 RAM is the world's fastest DDR3 2000MHz memory module. Available in 2GB dual channel kit (1GB x 2), the modules have just been released in Australia by Protac International Computers. \$599 www.protac.com.au

**WORK IN BED**

If you've ever wanted to work in bed, Office Organix has created the computer desk for you, the ErgoQuest Model 500. It can be used like a normal desk, or adjusted so you can slip a bed under it and use it while lying flat — the monitor and keyboard tilt over you on a motorised tilt platform. US\$3,695 officeorganix.com/

**FINGER FRIENDLY**

A new contact manager for Windows Mobile Pro, Finger-Friendly Friends can be used without a stylus, featuring a so-called 'Doesn't Really Matter Where You Touch' keyboard. FFF automatically matches all contacts in the touch zone under your finger. US\$14.99 jotto.no/fff



Intel's X48 chipset

Intel's X38 performance motherboard's successor is already with us.

Intel produces the best PC processors on the planet. But the Californian silicon specialist has a few dubious habits to address, one of which is embodied by this new motherboard chipset.

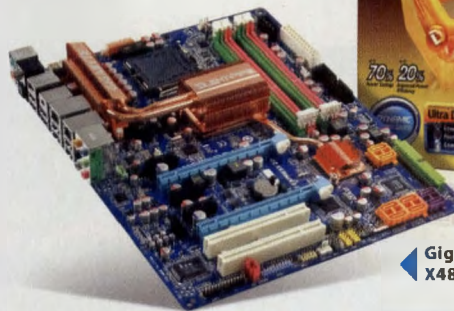
Known as the X48 Express, it slots in at the top of Intel's desktop range and comes hot on the heels of the X38 chipset. The X48 is the latest example of Intel's unwelcome tendency to leave existing customers behind by making relatively new chipsets redundant.

Granted, the pace of technological development on the PC platform has always been unforgiving. However, we still wonder whether it makes sense for Intel to release two extremely similar high-end chipsets in the space of three months.

Superficially, the X48 looks an awful lot like a mild revision of the X38 chipset, only with higher clockspeeds. Indeed, that's precisely what we think it is. Remarkably, however, we weren't able to confirm categorically via Intel whether the X48 in fact uses the same MCH Northbridge silicon as its predecessor.

In any case, what the X48 certainly delivers is support for higher processor bus speeds. Specifically, the X48 is Intel's only chipset that officially supports the boosted 1,600MHz bus frequency of its new flagship Core 2 Extreme QX9770 chip.

However, X38 boards from both ASUS and Gigabyte already add 1,600MHz bus support to the X38's official 1,333MHz specification. Similarly, the extension of DDR3



Gigabyte GA-X48TDQ6: X48 incarnate.

CONTACT Gigabyte
ONLINE www.gigabyte.com.au
MARKET Performance enthusiast
PRICE TBA

✓ PCI Express 2.0; 1,600 MHz FSB.

VERDICT ★★★★★

✗ Not going to be cheap.

memory support to 1,600MHz for the X48 doesn't really give it an advantage in the real world. ASUS's X38-based P5E3 Premium, for one, already supports DDR3 DIMMs running at 1,600MHz. It's also worth mentioning that the X48's Extreme Memory Profile (XMP) overclocking standards are limited to two memory DIMMs running in dual channel mode. If you wish to populate all four memory slots, XMP is not available.

Elsewhere, the X48 remains largely the same as the X38. It's therefore an extremely well-specified chipset. Just like the X38, it offers PCI Express 2.0 for greater bandwidth to add-in boards and peripherals, and includes a pair of 16-lane PCI Express 2.0 graphics slots. In theory, that's of interest to gamers looking for maximum 3D performance. In practice, Nvidia keeps its multi-GPU SLI platform locked down to its own motherboard chipsets, so only ATI's competing CrossFire solution is supported.

Premium-priced Intel motherboards currently have a problem, and its name is the ASUS P5E3. It's an X38-based motherboard that packs a snazzy Linux-based embedded operating system. It's actually a bit of a gimmick, and not all that useful, but it certainly adds a heap of perceived value and puts the P5E3 up a level of desirability.

However, if you can get past that, Gigabyte's GA-X48T-DQ6 puts in a solid showing. Performance-wise, it pips ASUS's P5E3 X38 motherboard in most of our tests.

Overall, we have little doubt that Gigabyte's latest will prove an excellent performer in the long run. However, we should also emphasise that the gap between this premium X48 model and more affordable alternatives based on Intel's entry-level P35 chipset is small. Unless you really need the features of the X48 or you have plans to buy a 1,600MHz bus Intel processor, it's likely that a P35-based motherboard is all you need in performance terms. And don't forget, this motherboard requires extremely expensive DDR3 memory.

Finally, you may be wondering what now happens to the X38. It's likely that most board makers will push it slightly down market to become a more mainstream performance chipset with affordable support for PCI Express 2.0. The really high end, meanwhile, will be reserved for the X48.

Jeremy Laird

PERFORMANCE TEST RESULTS

Motherboard	Intel X38 Express	Intel X48 Express
Crysis CPU benchmark	74fps	75fps
Cinebench R10	One minute, 11 seconds	One minute, 10 seconds
H.264 1080p video decode (CPU utilisation)	9%	9%
x.264 video encode	180fps	180fps
SiSoft Sandra bandwidth	8,243MB/s	8,055MB/s

Nvidia GeForce 8800GTS

Same name but a new game.

The 8800 line-up continues to grow as we work our way through 2008, and the latest incarnation to the naming scheme is the GTS. The main problem with the new 8800GTS is that it carries a name that has already been in use for months and is going to no doubt place more confusion into the minds of the consumer when it comes to buying a new graphics card. The good news is that we're here to help you figure out where everything fits and steer you in the right direction.

Officially as of now, you can only buy the 8800GT and the new 8800GTS. Unofficially, the Ultra still is available in some places. The GTX and the older GTS are long gone by now from a distribution standpoint but it's possible that some retailers still have stock; the problem is that with the price of these and the performance of the new cards, only the uneducated will find themselves buying a GTX or Ultra.

The main feature that the 8800GTS brings is the implementation of the new G92 core which we saw attached to the 8800GT. This moves us from the 90nm core to 65nm which should help in both the heat and performance department.

There are a number of other changes seen with the new G92-revised 8800GTS compared to the older 8800GTS, which came in 320MB/640MB variants. The new model carries with it 512MB of

CONTACT ASUS
ONLINE www.asus.com.au
MARKET Performance Enthusiasts
PRICE \$479

GDDR3 only but sees some large increases in other departments. Stream processors have moved from 96 to 128 in the new model while the 8800GT carries with it 112. Texture Address and Filters are also way up from the old 24/48 setup on the 8800GTS to 64/64 on the new G92 revision. The 8800GT also sits slightly behind with 56/56 as you would expect.

Clocks have increased across the board; working in the order of the older 8800GTS/G92 8800GTS/G92 8800GT we have 500/650/600MHz on the core so we can see we're way up compared to the older model. The Shader Clock has also increased significantly with 1,200/1,650/1,500MHz. While only a 512MB option is available on the new 8800GTS, the memory clocks have also increased coming in at 1,600/1,940/1,600MHz DDR.

On the topic of memory, the bus

width has dropped from 320-bit which we saw on the original 8800GTS to 256-bit, but what we should find with the increased clocks, stream processors, texture addresses and filters we should continue to see more performance.

While all these numbers are nice to know, what is ultimately important are the numbers we get in our favourite games, and the 8800GTS doesn't disappoint when compared to the older model. As you would expect, performance when compared to the 8800GT is up, but certainly not by a huge amount, and probably not enough to warrant the extra cost the G92 revisions 8800GTS carries.

While the 8800GTS is a good card, it isn't exactly great due to the price of it and the mere slight performance increase that is seen when compared to the 8800GT.

Shane Baxtor

apc
FIRST TEST



✓ Good performance.

VERDICT ★★★★★

✗ Value; dual slot.

VISTA SP1

SP1 includes an update to the Windows kernel, plus several security fixes and a change to Vista's search feature to more closely allow third party integration. If not yet available, the release candidate version of the service pack can be found on the Microsoft site.

www.microsoft.com



HARMONY AT HOME

If you're constantly misplacing the right remote for your TV, DVD player, stereo, Blu-ray drive, or games console, you might want to replace them with a universal remote like Logitech's new Harmony 1000i. It controls up to 15 components, across video, audio gaming and even lights and appliances. \$699.95

www.logitech.com



SECURE PARALLELS

Mac users do have to think about security software if they are running Windows on their Intel Macs. That's why a new version of the Parallels virtualisation software for the Mac, Parallels Desktop 3.0 for Mac Premium Edition, includes security software from third-party companies. \$159.95.

swsoft.com



PERFORMANCE TEST RESULTS

	XFX 8800GTS XXX 320MB	ASUS EN8800GT 512MB	BFG Tech 8800GTX OC2 768MB	GeCube HD 3870 X-Turbo III	ASUS 8800GTS (G92) 512MB
Crysis — 1,680 x 1,050 — All Settings @ Medium	43.47	50.1	52.87	48.11	57.33
Crysis — 1,920 x 1,200 — All Settings @ Medium	36.3	42.4	45.37	40.57	47.97
Company of Heroes — 1,680 x 1,050 — All Settings @ High	34.2	42	45.2	52.1	51.3
Company of Heroes — 1,920 x 1,200 — All Settings @ High	22.7	40.7	30.6	42.5	43.3

ASUS 8800GTS 512MB — Both games are running DX10 under Vista.

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PARTITION KING

Paragon software has released Partition Manager 9.0, the latest version of the partitioning software. It includes improved Vista compatibility, a new boot manager and advanced recovery options such as Initial Backup Facility, which provides a backup of all critical drive data. US\$39.95

www.partition-manager.com



3D TRANSFORMATION

The latest trend in image processing is turning ordinary images into 3D models. Stanford computer scientists have developed a computer program that takes a standard digital image and transforms it into a 3D picture. Best of all, you can submit your photos to it now, at <http://make3d.stanford.edu/>



AMD Radeon HD 3800 Series

AMD brings a whole new level to its graphics game.

Shrinking the die is all the rage at the moment. Intel has done it with its latest processor, Nvidia has done it with the G92 and now AMD is following suit with the latest graphics cards to come out of the red camp. The thing about the new HD 3800 series of cards is that, not unlike the G92 from Nvidia, it's more of a revision update to the current high-end cards rather than a whole new model.

Improvements between the G92 and RV670 cores are quite similar, with the biggest feature of the two being the smaller die shrink. Nvidia went from a 90nm die to a 65nm on the new G92. AMD already had a leg up on Nvidia with an 80nm die, and they continue to hold the smaller core with the RV670 at 55nm.

Apart from the die shrink, the major feature mentioned on the front of HD 3800 boxes is the inclusion of Direct X 10.1 support, which will be seen in the release of SP1 for Vista. While it adds some more features to what is becoming the quite-established DX10 code, when we will actually see the 10.1 advantages in games is still unknown.

In the technical department, not a lot has changed: stream processors remain the same with a total of 320, along with texture units, and render back ends staying at 16 — when compared to the older HD 2900 XT.

Where the big changes come into effect is related to the speed; the HD 2900 XT as stock came in with a 740MHz core and a 1,650MHz

1 GECUBE HD 3850 X-TURBO III

CONTACT Bronet
ONLINE www.bronet.com.au
MARKET Everyone
PRICE \$289

✓ Performance; quiet; pre-overclocked.

VERDICT ★★★★★

✗ Dual slot.

2 GECUBE HD 3870 X-TURBO III

CONTACT Bronet
ONLINE www.bronet.com.au
MARKET Everyone
PRICE \$389

✓ Quiet; availability.

VERDICT ★★★★★

✗ Dual slot; up against 8800GT.

DDR memory clock. The new HD 3850 is actually a little slower in the core department, coming in at 670MHz while the memory comes in 10MHz faster for a top speed of 1,660MHz DDR. The HD 3850's cost is actually considerably lower when compared to the HD 2900 XT, so to see specifications so close to the older XT is a bit of a surprise.

The HD 3870 on the other hand is the new king card from AMD, sporting a core clock of 775MHz and carrying with it a 2,250MHz DDR clock on 512MB of GDDR4. As is the case with the new G92-based 8800 cards from Nvidia, the HD 3800 cards carry support for PCI Express 2.0, which is seen on the X38 and the soon to be released X48 Intel-based chipsets. Fortunately, with full backwards compatibility to PCI Express 1.0, the cards are going to run without any problems on any motherboard sporting a 16x PCI-E slot.

The G92 saw the implementation of PureVideo HD, a hardware-decoding feature generally reserved for lower-end cards. It seems that AMD has

decided to follow suit with its Unified Video Decoder or UVD in the 3800 series. The old excuse of, "If you have a high-end video card you'll likely have a high-end CPU," just wasn't cutting it, and a lot of people felt ripped off by not having features that mid-ranged models like the HD 2600 and 8600 series carried.

AMD ATI Radeon partners have jumped straight onto the cards, and we already find companies like GeCube releasing overclocked models for both HD 3800 offerings. While the standard HD 3850 comes in with 256MB of GDDR3 memory, GeCube has bumped this to 512MB and clocked the card to 700MHz on the core and 1,900MHz DDR on the memory. If that wasn't enough, the HD 3870 X-Turbo III comes in with a massive 857MHz core and 2,500MHz DDR memory clock.

What this manages to do is offer some impressive scores for the models whilst maintaining excellent value for money, which we saw with the HD 2900 XT.

Shane Baxtor

notebooks

CONTACT Lenovo
ONLINE www.lenovo.com.au
MARKET Everyone
PRICE From \$1,499

✓ High spec; very usable.
VERDICT ★★★★★
✗ Colour and material choice oddities.

Lenovo IdeaPad Y510

Not quite like your boss's ThinkPad.

Lenovo's ThinkPad (branded IBM before that) has been a perennial standard for business notebooks. It seems like every big business loads up their employees with an X series and lets them get on with it. Though they make outstanding business notebooks, as an entertainment, student or home-use portable, the ThinkPads don't offer many of the features people want to see.

Thus the IdeaPad was born. Late December 2007, Lenovo jumped into the deep end of the consumer notebook paddle pool, and we're surprised at the results. We shouldn't be, really, as Lenovo/IBM have been making notebooks since day one, but in a very staid, slow-moving market. As a first attempt at cracking a new market, the designers at Lenovo have really hit the nail on the head. Sure, it still looks like it was designed by someone sitting in a cubicle, but the flashes of colour are at least a nod toward design for design's sake.

We looked at the IdeaPad Y510 for this review. The Y510 was certainly more highly-specced than we expected. Featuring an Intel Core 2 Duo T7500 at 2.2GHz, 2GB of DDR-667 and a 250GB hard disk drive, it's far from the most sluggish

notebook around. What raised our eyebrows was the inclusion of Nvidia's 8600M GT graphics adaptor, which is a massive upgrade from the usual Intel integrated graphics seen in the majority of notebooks.

The Y510 is a 15.4in model, with a wide-screen panel at 1,280 x 800 resolution. The screen is nice and clear, with a reflective 'brite' coating. Our guess is the screen's resolution has discouraged Lenovo from installing a next-gen optical drive in the Y510. It's fitted with a slot-load DVD Supermulti DL, but we would have really loved to see a Blu-ray or HD-DVD drive in here for 720p HD content. There's the usual array of inputs and outputs, including ExpressCard and S-Video, but strangely, there's a VGA output but no DVI (or HDMI).

The system includes some orange glowing inductive media buttons (fast forward, rewind etc.) which seem to be just the right colour to annoy with the lights out. It's taken two years to get used to piercing bright blue LEDs, and Day-Glo orange is anything but subtle.

A nifty gadget (we shy away from the word feature here for a reason) is the inclusion of Veriface Facial Recognition technology used for logging in to the notebook in

lieu of a typed password. The facial recognition seemed to work most of the time, but small changes like wearing a pair of spectacles, or sitting with your head tilted slightly to the left or right, could sometimes throw it for a loop. We guess it's better to have it over-sensitive than have false positives, but it doesn't feel like something we'd trust our private data with. If you set the security level high enough to feel like you're actually protecting the notebook, it's usually faster to type the password rather than try to bend and flex into the same facial expression and posture as you were in when you enrolled in the software. Fun as a freebie though!

The general build of the notebook puts us in two minds. It seems very solid and sturdy, reflecting its ThinkPad heritage, but some of the material choices, specifically the crosshatched textured lid, seem a bit cheap and showy. It doesn't feel like it will break or scratch, but it's far from a premium experience. Some models have different textures as an option.

ThinkPads have earned their place in IT history. As a consumer notebook, the IdeaPad may well do the same.

Nick Race

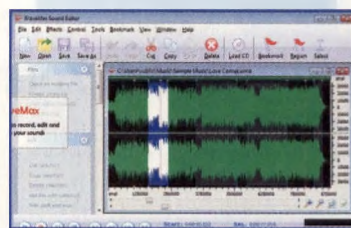
BLOCK USB PORTS

MyUSBOnly 3.2 is a Windows security app that prevents data theft through a computer's USB ports. It will only allow USB devices that you specify on a white list and will maintain a log of attempts to gain access to your computer via USB keys, iPods, card-readers, or any USB hardware. Plus, the software can run silently on your PC. US\$29.90, free 27-day trial version available. myusbonly.com/usb/index.php



LEGACY SOUNDS

WaveMax Sound Editor 3.25 digitises recordings of music cassette tapes, vinyl LP disks and videos. The digitised records can then be recorded onto CD's. All you do is attach a cable from the sound device to the computer, start playback and click the Recording button. The software will save the output to the hard disk drive, creating standard digital sound files. US\$39.99. A 30-day, fully functional trial edition of the product is available from: wave-max.com



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Cunning compact cameras

The next generation of digital compact cameras is here, but are they too clever for their own good?

Put simply, the new generation of digital compacts is a high-on miracle of miniaturisation. The recently launched Casio Exilim EX-Z1200 is a case in point: only slightly bigger than a credit card but housing a mighty 12MP sensor that delivers enough resolution to put many DSLR cameras in the shade.

Canon and Fujifilm have followed suit with their own slimline, 12MP compacts, even if that number of pixels can be a cause for concern. In reality, you need a mere 3MP for a perfectly good, full A4 photo print and only about 2MP for a high-definition full-screen image. Indeed, you can get flawless poster-sized prints from 5MP images, so what possible need is there for 12MP?

The answer is flexibility. In theory, if you have a 12MP image, you can throw 75 per cent of it away and be left with a perfectly good 3MP photo. With the luxury of 'creative cropping' you can, for example, cut out and print photos of individual people from a single

group portrait image, or close in on and magnify small, distant objects when the telephoto range of your zoom lens falls short.

THE 'BIG' ISSUE

However, creative cropping places enormous demands on the quality of a camera's imaging system and lens. Compared with DSLR image sensors and lenses, those of the compacts are much smaller. In order to cram 12 million pixels onto a small sensor, the individual pixels are tiny, as is the amount of light that each sensor pixel can capture.

Such high levels of amplification in the camera's image processing system often means high levels of noise. Historically, noise levels have become unacceptable when shooting with high ISO sensitivity levels in compact cameras, as this requires even more gain in the image processing channel. The challenge is even tougher when high levels of sharpening are required to enhance the resolving

power of small-sized compact camera lenses, because extra sharpening introduces yet more digital noise into the image.

To battle these problems, the latest generation of compact cameras introduces refined sensor designs, like Fujifilm's seventh generation of Super CCD HR sensor, as well as redefined image processing engines, like Canon's Digic III, Casio's Exilim Engine 2.0 and Fujifilm's Real Photo Processor II. The results can be spectacular, although high ISO sensitivity settings can still make for noisy images in practice.

STABILISERS FOR ALL

To avoid blurry images caused by camera shake, a common weapon is image stabilisation, but, in this respect, not all cameras are created equal. The Casio and Fujifilm models here rely on a CCD-shift anti-shake mechanism, a computerised system that senses physical movement or vibration in the camera and aims to

offset it by continuously moving the sensor in the opposite direction. The net result is that the sensor is kept as still as possible. And the system works pretty well, typically giving you a couple of extra stops before camera shake becomes a problem.

Canon bucks the trend with a more expensive solution — an 'optical' image stabiliser which relies on a microprocessor-controlled group of elements built into the main lens, which are physically moved to offset any vibration thereby keeping the path of light as stable as possible.

Image stabilisation only protects against camera shake, rather than correcting for any movement on the part of the photo's subject. Refreshingly, all three models here offer anti-blur modes that automatically increase ISO where needed, while also bringing image stabilisation into play. This gives you the best chance of capturing sharp images in low lighting conditions, although, again, image noise can be

COMPACT CAMERAS

Casio Exilim Zoom EX-Z1200

Casio's new compact camera is a largely automatic affair and is easiest to use in 'Snapshot' mode, making its own choices for colour rendition, contrast, sharpening and various other attributes. There's also a huge array of scene modes and, unlike the Canon, there are rudimentary options to switch between apertures.

In our tests, image quality tended to have rather more bite than with the Canon. Landscape images were especially vibrant, with an impressive amount of fine detail. Portraits were a little less impressive, however, with skin tones tending to be a little on the



cool side. There's also no facility for removing red-eye in playback mode, as featured on both the other cameras, but, on the plus side, the menu systems are extremely intuitive.

- CONTACT Casio
- ONLINE www.casio.com.au
- MARKET Everyone
- PRICE \$599

✓ Menu systems; vibrant colours.

VERDICT ★★★★★

✗ Skin tones aren't ideal.

COMPACT CAMERAS

Canon Digital IXUS 960 IS

The new 960 IS has a tough titanium body that's slightly curved to sit comfortably in the hand. The 960 IS is easy to use with a fully automatic Programme AE (Auto Exposure) mode that gets things right nearly all the time. That's just as well, because there are no aperture- or shutter-priority options, and the 'Manual' mode is a complete misnomer.

The 3.5x zoom lens proved the least sharp of the three cameras in our tests, although, in its favour, the extra zoom range takes you from 35mm to 140mm, offering a fair bit extra at the telephoto end. What's more, the built-in



optical image stabiliser makes the extra telephoto length even more usable than with other cameras, offering an extra stop before camera shake becomes a problem.

- CONTACT Canon
- ONLINE www.canon.com.au
- MARKET Everyone
- PRICE \$649

✓ Good anti-shake; telephoto range.

VERDICT ★★★★★

✗ Manual mode is anything but.



Canon Digital IXUS 960 IS: good image quality, but the lack of manual metering modes is frustrating.

Fujifilm FinePix F50fd: stunning image quality and great creative control make the F50fd king of the compacts.



problematic when very high ISO settings are invoked.

FACE OFF

With portrait photography in mind, all of the cameras we've chosen include new or improved 'face-priority' autofocus modes. For example, the Casio system, which was actually developed by OKI, seeks out and focuses on human faces, while an additional 'tracking' mode can also lock onto them, analysing the velocity and vector in real time and continually refocusing as necessary.

Not just for individuals, the latest face-priority autofocus modes can often pick out around nine faces in a scene and then adjust the lens' focus point so that all of them are as sharp as possible. Fujifilm's new system adds more 'intelligence', recognising faces when they're at severe angles to the camera or even in full profile, as well as fully tilted on one side or even upside-down. Not to be left out, Canon's new IXUS extends face-recognition to the camera's flash metering system as well, to provide accurate levels of flash in a portrait even if the sitter is positioned well

away from the centre of the frame.

A problem of flash units in compact cameras is that, because they have to be positioned so close to the lens, red-eye is an ever-present danger. One old remedy is the ubiquitous 'red-eye' flash mode, which fires a number of pre-shot light pulses to narrow the subject's pupils and reduce the effect of red-eye. However, this makes for poor portraits with a lack of any natural spontaneity. The Canon and Fujifilm models in our group go one better by offering red-eye removal tools in the image playback menu. This aims

to analyse the image and automatically remove red-eye without desaturating other image elements, like red lips. In our tests, both cameras made a very good job of this, although the Fujifilm had the edge over the Canon.

With the launch of the latest 12-megapixel cameras, manufacturers seem to have countered many of the issues that have plagued slimline 'pocket' digital cameras in the past. All the cameras on test deliver DSLR-like quality with supreme ease of use and take-anywhere portability.

Matthew Richards

COMPACT CAMERAS

Fujifilm FinePix F50fd

In the battle to produce low-noise images at higher ISO sensitivity ratings, the new Fujifilm F50fd wins out over the other two cameras, thanks to a new generation of Fuji's Super CCD HR sensor. This is further enhanced by a 'Natural Light' mode, which breathes life into dimly lit scenes and is great for indoor shooting without a flash.

There are three main colour modes, a very natural Standard mode, a more vibrant and dramatic Chrome mode and a Black & White mode. Extending the shooting options beyond fully automatic 'programme' and scene modes, the camera also

features aperture- and shutter-priority, each with one-third stop adjustment increments. Along with a wealth of other features, this makes the F50fd much less of a point-and-shoot camera.

It's still great in fully automatic modes but offers a far higher level of creative control when you want it. With a pin-sharp lens and beautiful overall image quality, this camera is an absolute steal.



CONTACT Fujifilm
ONLINE www.fujifilm.com.au
MARKET Everyone
PRICE \$499

✓ Picture quality; flexibility.

VERDICT ★★★★★

✗ Deeper functions can be complex.



COREL MORE

CorelDRAW Graphics Suite X4 is certified for Vista and adds more than 50 new features, including live text formatting (you can now preview text formatting options before applying them to a document) and integration with an online font identification service. \$829 for the full version and \$399 for the upgrade.

www.corel.com



BREAD AND BUTTER

Canon has upgraded its bread and butter A-series digital camera range. The top-of-the-range \$279 Canon PowerShot A590 IS includes an Easy Mode function and a Creative Zone, in which users can set up their own shooting parameters.

www.canon.com.au

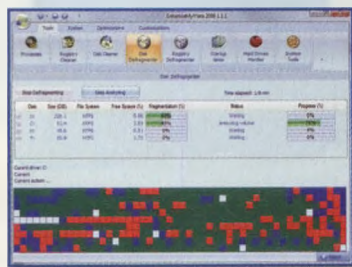


FAST VISTA

There is nothing more frustrating than seeing Vista's startup slow to a crawl as the OS gets gummed up with poorly written software/drivers. EnhanceMyVista is an analysis utility that displays what software slows down the startup and lets you disable it.

US\$29.95

www.seriousbit.com



Belkin N1 Vision

The Belkin N1 Vision is one of the first wireless routers to boast the second draft of 802.11n, but that's not all...

The process of establishing a new wireless standard started soon after 802.11g gained a foothold back in 2004. The first draft of 802.11n appeared late in 2006 after long-running disagreements over the specification. It didn't test too well as it had extremely poor interoperability between different manufacturers' equipment — the *raison d'être* for having a standard in the first place. Even using the same manufacturer's equipment resulted in poor transfer speeds.

With a second, more stable, draft of the wireless standard, there's more stability and it's closer to the final expected real-world speeds of over 100Mbit/s. But it's not the final standard. The IEEE organisation will finalise the standard when its snail's pace-procedures have run their course.

This second draft is supposed to create a new landmark in all this mess. To reassure customers, the Wi-Fi Alliance — the industry body backed by the vendors selling the kit — has started to 'certify' draft-802.11n devices. Having the logo on the box means interoperability is guaranteed between manufacturers' gear. While this should alleviate some of the uncertainty, the idea of certifying something that isn't finished doesn't make sense. The N1 Vision isn't yet certified, according to the Wi-Fi Alliance official list, but other N1 equipment is, so it's only a matter of time. Our preproduction box simply had the 802.11b/g certificate on the side.

It should mean networking vendors aren't in such a sticky place. Selling their draft-802.11n wares is a problem the Wi-Fi Alliance's certification is designed to alleviate. Price points are another predicament. Draft 802.11n kit is still horrendously expensive — like the slightly sportier model that few can afford.

Belkin's answer is to differentiate. At the top of the tree is the N1 range, of which the N1 Vision is the latest instalment. It's a router

CONTACT Belkin
ONLINE www.belkin.com/au
MARKET Everyone
PRICE \$349

✓ Screen for network management.

VERDICT ★★★★★

✗ Expensive.

with a screen feeding you various network diagnostics. A standard N1 router is also available, as is an ADSL-compatible model. Then there's the N range. Note the subtle but confusing difference there. The N range is a cut-down version that's still nippy, but it costs less. It has a 2 x 2 MIMO (Multiple Input, Multiple Output) arrangement rather than the 3 x 3 array in the N1 range. It also has lower range and throughput than the full-fat N1.

So what's the idea behind the N1 Vision? It looks like another attempt at differentiation. As 802.11n is still at an early stage of implementation, vendors are limited to the early adopters. And the vendors, Belkin reasons, wouldn't mind their routers being on display.

It's intended for the tech savvy yet aesthetically aware, but, for those of us who prefer to gain the inside edge, there's a few natty features, too. The best is the ability to hand out 'guest passes' to people who visit your office or home. Press the button and it will generate a security key for single-time use. Also superb is the client view — you can see who's connected and how much of your bandwidth they're eating.

Performance

Belkin N1 Vision: Gigabit Ethernet and a view that shows bandwidth usage are appealing features.

of the second draft specification is a lot more stable and works with standard 802.11g wireless adaptors, which is what you'll probably be using. Once again, though, the draft 802.11n's boon is range, which is superb in terms of cutting out obstacles — even in our busy office environment.

As for the Vision's other features, it's good to see that Gigabit Ethernet is also making it into more routing kit, especially when the outlay for the device isn't inconsiderable.

The screen is undoubtedly a luxury, but handy nonetheless. Although, we found its novelty did wear off: perhaps that's no surprise considering it's still just a router.

Dan Grabham



Canon PIXMA MP610

From crisp mono and colour documents to stunning photos, can you really get an all-in-one printer that joins all the dots?

There's no denying that email has transformed the way we communicate but, for most of us, a printer is still an essential extra. What we really want is the ability to print crisp, clear documents as well as creating immaculate photo prints. Traditionally, this has meant finding space for two separate printers, as well as doubling up on purchase prices and running costs. But why? The answer lies in the inks.

For rich, solid black text, you need a pigment-based black ink, as opposed to dye-based black inks which make for a greyish-looking output. Inkjet printers for document printing also use just four inks, as the traditional CMYK line-up produces a sufficiently wide colour space for colour text and graphics pages. Switch to photo printing and you require a wider colour space, so the printer can recreate something that comes closer to the full gamut of colours found in nature, as well as allowing for smoother skin tones and subtle colour graduations, typified by blue skies. However, as well as being less suitable for doc printing because of the feint, greyish black problem, they're also slower and more expensive to run.

One answer with many HP and Lexmark printers allows you to swap the pigment-based black mono cartridge for a tri-colour 'photo' cartridge that uses dye-based black, light cyan and light magenta. In conjunction with the standard tricolour (CMY) cartridge, this allows you to switch between four-ink and six-ink printing with the same printer. However, swapping cartridges can be a chore and the cartridges tend to dry out after a few weeks, even if properly stored away from the printer.

HP has started to move away from tri-colour cartridges, after criticism over the prices involved. However, as these cartridges contain built-in print heads, you're basically getting a brand-new print head every time you change cartridges. Print heads on most Epson printers, for example, are



CONTACT	Canon
ONLINE	www.canon.com.au
MARKET	Everyone
PRICE	\$299

✓ Fast; high-quality printing.

VERDICT ★★★★★

✗ Sluggish duplexing.

non-replaceable, so once they're worn out, you need a new printer.

The plus side for Epson is that the majority of its printers use individual ink tanks, so you don't need to throw away unused ink, as part of a tricolour cartridge. Even so, Epson photo printers have been notoriously poor in the past for document printing and, while the resin-based inks used in some of its doc printers offer great splash-resistance even on plain paper, lacklustre photos are the trade-off.

While other manufacturers stuck rigidly to four-ink or six-ink printing, Canon introduced a compromise with five-ink printers. Uniquely, these combined dye-based CMYK inks with a second, pigment-based black ink. The use of two blacks actually increases contrast and widens colour space, while offering an excellent turn of speed, both for document and photo printing. Ink costs are refreshingly low, with photo printing working out to about half that of Epson and HP six-ink printers.

The PIXMA MP610 is the latest Canon five-ink, all-in-one printing solution, with dual input trays, auto duplex facilities and direct printing onto CDs or DVDs. An ultra-high resolution 4,800 x 9,600dpi, A4 flatbed scanner is built into the lid

for class-leading image quality, while direct photo printing is handled by a multi-format memory card reader and a 6.2cm colour LCD. An intuitive onboard control system works equally well for standalone mono or colour photocopying.

The MP610 refines the five-ink process to produce the most lifelike skin tones we've seen from this type of printer, plus a vibrant colour range that puts most six-ink printers in the shade. Best of all, the mono text pages and colour DTP output is superbly fast, taking six seconds and 17 seconds respectively, while top-quality A4 borderless photos are created in about one minute and 45 seconds. The iP4500 is basically the same printer without the scanner and all the direct photo printing facilities, at just \$199.

What's most impressive about Canon's five-ink printers is that the quality is simply stunning for document and photo output alike. In fact, such is the popularity of these printers that Canon has now all but eradicated conventional six-ink photo printers from its A4 printer line-up. The only exception is the PIXMA MP970 for professional use, but, for the rest of us, the iP4500 and MP610 are impossible to beat.

Matthew Richards

NEW KVMS

A new family of KVM switches for small and home offices has been released by Avocent. The SwitchView 100 switches come bundled with all the necessary cables for a solution that's ready to deploy out of the box. It comes with full audio support, eliminating the need for separate sets of speakers and microphones for each PC. From \$52 to \$118

www.avocent.com



FLASH MEMORY VIDEO CAMERAS

Canon has just launched three new HD camcorders which use flash memory to record data, the HF10, FS11 and FS100. They offer full 1,920 x 1,080 HD resolutions as well as extended memory (16GB) and easier file transfers. RRP: TBA

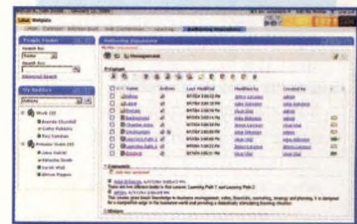
www.canon.com.au



MYCORPORATEBOOK

Social networking software where your employer keeps track of your activities? We can't see it replacing Facebook, but you may have no choice if your employer uses Lotus Connections, IBM's corporate social networking software. IBM has announced a plug-in which allows the company to visually map the social networks that exist between its employees: who is generating content, who is consuming it and who is interacting with whom about what.

REIDD@au1.ibm.com



**REDFLY MOBILE COMPANION**

Celio Corp's REDFLY Mobile Companion turns your smartphone into a laptop. Connecting to your mobile via USB or Bluetooth, it adds an 8in diagonal screen, keyboard and touchpad mouse extension, with an 8-hour battery. US\$499 when the device becomes available next month.

www.getREDFLY.com

**OPEN SOURCE**

The winners of an international competition for open source software, the Les Trophées du Libre, have been announced. One of the biggest hits was a maths software package called Sage, built by students at the University of Washington.

www.tropheesdulibre.org/?lang=en

**DRY EYES**

If you get dry eyes when looking at a computer screen for too long, a spray called Tearsagain could help. What's unusual about it is that you spray it directly onto your eyelids. Marketed by BioRevive, it's available in pharmacies and also optometrists. \$24.95.

www.tearsagain.com.au

Paint Shop Pro Photo X2

Fast, effective and fuss-free imaging tools have arrived.

Download any image from a digital camera and there's always room for improvement, from basic cropping, straightening and sharpening, through brightness, contrast and saturation adjustments, to applying those creative effects. Unfortunately, while the possibilities are almost endless, so is the time and effort you can spend trying to get the results you need.

To make matters worse, the lack of expensive film or processing costs makes most of us incredibly trigger-happy with digital cameras, so we usually end up with far more images than we want. This comes back to bite us at the reviewing stage, with yet more time required to trawl through hordes of images, trying to pick out the best shots and throwing the rest away. To our minds, Vista's omission of Filmstrip view in folders makes choosing your best shots a lot harder than it used to be, so effective previewing is more important than ever in image-editing programs.

Recently, Photoshop Elements 5's 'Organizer' mode has had the edge. For its part, Paint Shop Pro's Organizer offers tools for rating your photos, emailing them, ordering prints online and carrying out basic tweaks. However, it's at the next step, when you want to carry out more complex enhancements to your photos, where things get really challenging.

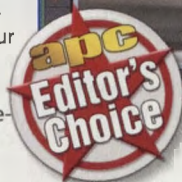
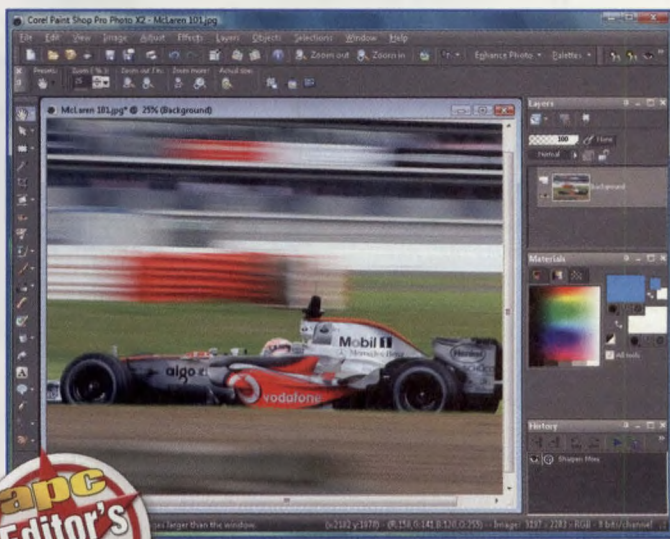
The Quick Fix modes of most photo programs demand that you open each photo into the program before carrying out your desired enhancements, then save and close each image before moving onto the

• CONTACT Corel
• ONLINE www.corel.com.au
• MARKET Everyone
• PRICE \$199

✓ Great new features; Express Lab.

• VERDICT ★★★★★

✗ Organisation tools could be better.



Corel Paint Shop Pro Photo X2: a fast, easy route to individually enhancing digital photos.

next one. When dealing with more than a few images, this rapidly turns into a time-consuming chore. Naturally, if you want to apply the same enhancements to every image, you can set up batch processing, but life is never that easy. With this in mind, Paint Shop Pro Photo X2 comes at the problem from a new angle, with its Express Lab function.

The key benefit of the Express Lab is that you can preview pictures in large windows, complete with zoom controls, and apply a barrage of enhancements to them on the fly,

including cropping, straightening, rotating, cloning and 'makeover tools'. There's even a Smart Photo Fix tool for adjusting overall brightness, shadows, highlights and saturation. Once you've finished, you can save the altered image at the click of a button, or just discard the changes and move onto the next image instead, which in turn loads almost instantly into the Express Lab preview window. In practice, this new way of working can prove to be a great time-saver.

Matthew Richards

COREL PAINT SHOP PRO PHOTO X2

This version of Paint Shop Pro has a new 'Graphite' dark grey interface, intended to cause less distraction when you're editing photos. There is also the usual raft of new features that come with a Corel upgrade. As well as the Express Lab for high-speed editing, there are some great new 'Film and Filters' effects, to simulate styles such as Glamour,

vivid skin tones and vibrant foliage. The makeover department also gets an upgrade, with a new eye-drop mode for taking the redness out of tired eyes (not to be confused with the flash red-eye tool), enhanced blemish remover, toothbrush and suntan tools, plus a brand new Thinify mode, for making people look thinner. We also love the new easy HDR mode.

Productivity enhancements include tools for saving images for Office projects, plus a new Auto-Preserve option to protect your original images from being accidentally over-written. More than just a minor tweak of X1, the new X2 is a major overhaul of Paint Shop Pro, putting it at the top of the heap for serious yet cost-effective image editing.



When you purchase an LG LCD monitor, you're buying state of the art picture quality. In fact, we're so confident in our superior quality standards that we've introduced a 3 year "perfect pixel" replacement warranty. Perfect Pixel warranty is available on most LG LCD monitors providing you up to 3 years replacement warranty on dead pixels, giving you even more confidence when you choose LG. For more information visit www.lge.com.au



**WILDCHARGE PAD**

The trend towards wireless charging is on. A wire-free charger has been released by WildCharge Inc in the US. It's a pad with a metal plate with alternating conductive strips. Put a mobile or an iPod on it and it will start charging them, through special adapters connected to the charger ports. Expect that manufacturers will start incorporating the adapters into the devices themselves, for complete hassle-free, no cable charging.

www.wildcharge.com

**MY HUMP**

The Japanese love their dogs. Sony based its popular Aibo robot on a dog, so it's no surprise there are many kinds of other dog-themed accessories, including humping dog USB keys.

www.strappy-world.com/products/24211.html

**IMAGE CONVERTER**

36-image converter is a utility that can convert .bmp, .gif and .jpeg and more than 20 other image types into 36-other types, including .tiff, .pdf, .pii and much more. Best of all, it's freeware, available at:

www.phoenixsoftware.com/36-ic.html



ABBYY FineReader 9

New-gen OCR seeks to enhance understanding in reading skills.

The paperless office, first proposed way back in the 1970s, hasn't quite become a reality. The proliferation of PCs and high-speed printers mean the business world is using paper more than ever. Paper is still an attractive proposition; you can read paperwork anywhere, anytime, without the need to boot up an OS, no batteries are required and you can make easy alterations to text. But there's a problem: a big one.

The major difficulty with paper is that almost everyone works on PCs and before you can edit paperwork or store it electronically, you have to digitise it. At the most basic level, this means scanning it in as a 'picture' of the original page, which is fine for keeping an exact copy of a document. However, if you want to make changes to documents, you naturally need to capture the text of a printed page as actual text, which means the computer has to be able to 'read' the page. Historically, this is the imprecise science of Optical Character Recognition (OCR).

Pretty much every area of OCR has been long overdue for a major revamp. At the nuts and bolts level, even major commercial programs like ABBYY FineReader and OmniPage have long been renowned for poor basic reading skills, generating so many spelling mistakes and other textual inaccuracies when scanning pages that users would often wonder if they'd save time by copy-typing documents themselves from scratch. Sidestepping this issue, OCR packages have more recently

CONTACT Topsoft
ONLINE www.topsoft.com.au
MARKET Everyone
PRICE \$399

✓ Increased accuracy.

VERDICT ★★★★★

✗ Expensive.

boasted higher levels of 'intelligence' by interpreting page layouts automatically, inputting columns and frames of text as individual entities, while also scanning diagrams and illustrations as pictures, before going on to reassemble the whole page as a neatly formatted Office document. It sounds great in theory but, in the real world, the accuracy of results has been a rather moveable feat.

The good news is that, finally, the latest versions of top OCR packages are taking a more holistic approach to scanning. With improved processing systems that feed off the benefits of better, higher-resolution scanners, combined levels of character recognition and much higher page layout accuracy are achieved. For example, the new versions of ABBYY FineReader and OmniPage boast accuracy enhancements of 32 and 27 per cent respectively. But more than this, there have been real improvements in how OCR interprets and 'understands' the written page and, in the case of FineReader, how it converts multi-page documents into sensible and usable native Office formatting commands.

Scanning documents into a PC isn't exciting, especially compared with the more James Bond-like pursuit of whipping out a slimline digital camera from your pocket and furtively photographing documents or pages from books.

The latest OCR packages have taken this on board, with new features to improve the accuracy of digital camera capture.

ABBYY does a great job of taking even a complex page layout and reproducing it in editable form, complete with columns, tables, pictures, graphs and an absence of spelling mistakes.

Adaptive Document Recognition Technology (ADRT) is built into the program. The idea is that by processing documents as a whole, rather than a series of individual pages, the program can identify page furniture like headers, footers and page numbering, automatically converting them into native Office formatting commands. The net result is that Word and Excel files usually require little or no manual formatting, which offers potentially huge time-savings.

Version 9 has a redesigned, task-focused interface. Most jobs are now reduced to a single mouse-click. Output options and formats are also plentiful, including five types of PDF file, PowerPoint and HTML. At this price, this is the only OCR that most of us will ever need.

Since its original inception, OCR has always sounded like a great idea but lacked a little something in the translation. However, with the latest improvements in accuracy, versatility and sheer usability, it's come of age.

Matthew Richards

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Register online at www.tpg.com.au or call 1300 360 855





SUPER MOUSE

There are mice and then there are super mice. Logitech's G9 is one of the latter. With a 3,200dpi high-performance gaming-grade laser engine and instant cursor response (up to 1,000 reports per second) and with a weight tuning system with 28g of metal ballast, it's the ultimate precision mouse. \$169.95

Logitech.com



NEW DRIVES

Soon to appear in notebooks and portable devices are Western Digital's 320GB 2.5in slim SATA (Serial ATA) hard disks. The WD Scorpio drives use advanced head and media technology that also make the drive very quiet while running at cool operating temperatures.

www.westerndigital.com



DEFRAGGING

The disk defragmenter built into Windows isn't as good as specialist defragmenters, and the gap is widening. Diskeeper 2008 can now defrag a disk even if free space is as low as 1%, (Windows doesn't like anything under 15% free space). It's available in different versions starting from \$88.

www.pixel.com.au



AdAware 2007

Anti-spyware (can be) an important tool in your security setup.

We've all encountered those programs that somehow find their way on to your desktop, followed by the pop-ups that simply just won't stop popping. Make no mistake, spyware — software installed on your system without your permission — is a big problem.

In its most common form, spyware piggybacks onto your computer through another program you've downloaded out of choice — some P2P software bundles are notorious for this. It then monitors what you're looking at so it can target and repeatedly fire advertisements in your direction.

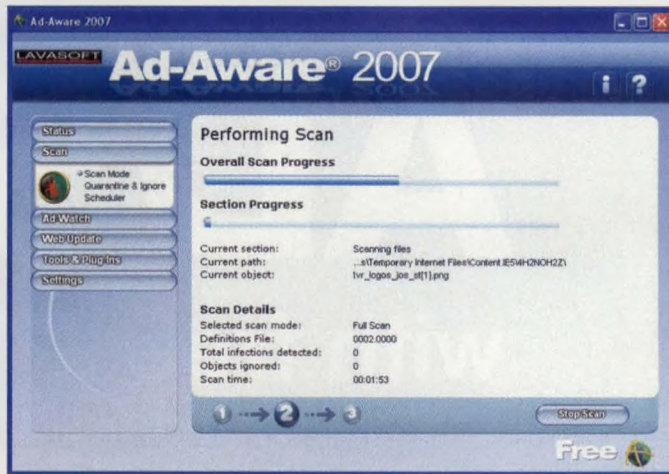
Thankfully, if you keep it up-to-date, anti-spyware software monitors your system in real time, flags anything it recognises from its database of malicious software and easily removes these irritants.

But spyware is a misleading name, and it can be far more intrusive and dangerous than pop-ups tenuously related to your browsing history. Under this umbrella term sits all kinds of antisocial programs, from adware to rootkits and keyloggers.

Rootkits aren't a danger in themselves, as there are often legitimate reasons for software to hide files and get around user privileges — but they can be put to devastating use, including blocking files and taking control of systems. Worse, they disguise their installation and can be hard to dislodge.

Similarly, keyloggers can be a serious problem. Type in your password while one is watching and you'll regret it. Scammers are smart enough to guess they might be your bank passwords too, and your account could be drained before you know it.

Not all anti-spyware is cut out to deal with menaces like these. One of AdAware's crucial weaknesses is its disregard for commercial keyloggers, assuming they must have been installed legitimately. This is perhaps a naive assumption. Half of hacking is social engineering, as any security expert will tell you — it wouldn't take much to trick your way into an office setup with



AdAware 2007: several scan modes will quickly find any problems.

CONTACT Lavasoft
ONLINE www.lavasoft.com
MARKET Everyone
PRICE Free

Effective spyware removal...
VERDICT ★★★★★
...but purely after the fact.

AdAware running and simply install a keylogger.

Malware creators are a smart bunch, and while the abundance of free anti-spyware means everyone can have access to security on their systems, they're using this to slip poison into the medicine. We're now seeing rogue anti-spyware, which can do quite the opposite of its claim and infest your PC.

It's not all bad news, though. Some anti-spyware can even pull out these critters, and a combination of anti-spyware search-and-destroys leaves very little left alive that shouldn't be.

Ultimately, if you're a savvy net user, you won't be straying too far into warez territory, and you'll be cautious about downloading anything that isn't from official sources. And given that free diagnostic tools from the right sources (such as NanoScan) can be just as effective, it's sometimes hard to see why you would need the added cost of anti-spyware licensing on top of your regular antivirus.

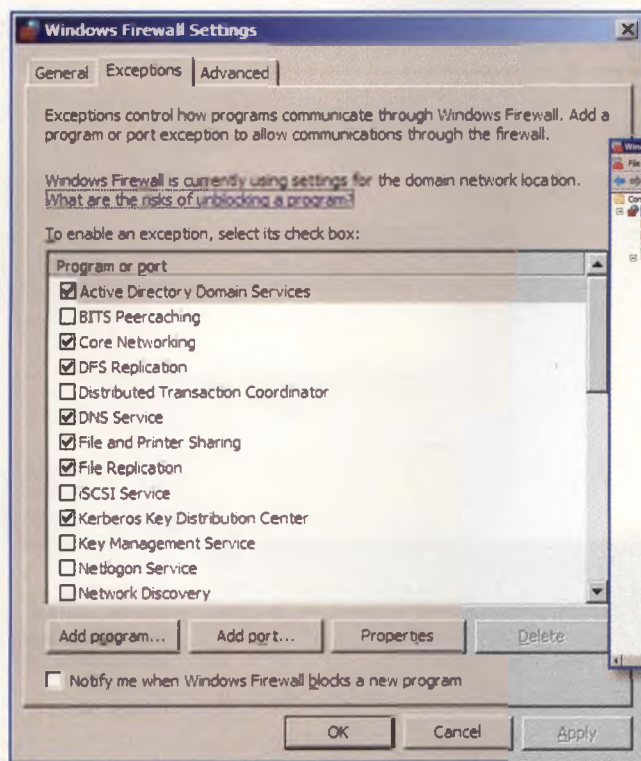
We found the latest edition of AdAware is a bit of a let-down. The

revamped engine and interface work well: it ran its smart-scan in three minutes, a total check in 12, and it chugs along in the background. But while the complete scan was swift, it sometimes crashed and ran indefinitely. We were also told that we couldn't connect to the server to update — which is what you pay for in the Pro version.

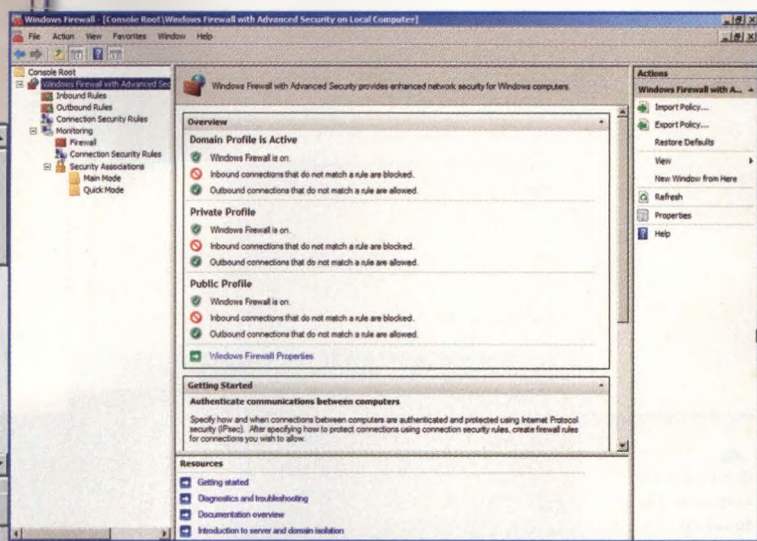
But AdAware's main problem is that it's reactive. Yes, it can tell you which pests have infected your system, but that's like the fire brigade telling you your house burnt down after it's happened. Glaringly, it's unable to detect files hidden by rootkits, so any trojans on your PC can relax. Pre-emptive action would be preferable.

Other features — such as complete internet history removal and pop-ups warning you of program launches — make the free version a mid-range weapon in your arsenal against malware, but it's hard to justify the expense of the Pro version when competitors such as Spyware Doctor are much more effective.

Ben Sillis



The old user interface from Windows XP. Where are the new goodies?



The new, streamlined interface with access to every single setting in this complex firewall.

Windows Firewall in Vista and Windows Server 2008

The firewall used in Vista also appears in Windows Server 2008. *Paul Schnackenburg* finds it's a massive improvement on the firewall in XP SP2.

The firewall in Windows XP SP2 can be summed up in one word: adequate. Its cornerstone of security is loosely based on ancient warfare. If you don't know where the attacker is coming from, surround your city (PC) with a moat (perimeter firewall), a high wall (host firewall on every PC) and a good supply of boiling oil (antivirus and spam software).

What XP doesn't offer is protection against traitors, the guy on the inside that sneaks out in the middle of the night and lowers the drawbridge, opens the gate and hands the city to the enemy. Outbound filtering just isn't there in Windows XP. But it's present in the firewall that comes with Vista and Windows Server

2008, along with numerous other enhancements.

Chief amongst these are a new user interface, total Group Policy control, user account awareness for building firewall rules, three profiles for different network environments, and boot protection. There's also a merging of IPSec and normal IP rule configuration in one place and full support for IP version 6.

On a Vista machine (or Windows Server 2008), there's a Windows Firewall icon in the Control Panel, just as in previous versions of Windows. And it looks the same — the General tab lets you turn the firewall on or off, the Exceptions tab lets you choose from a predefined list of exceptions, and Advanced lets you choose which networks to

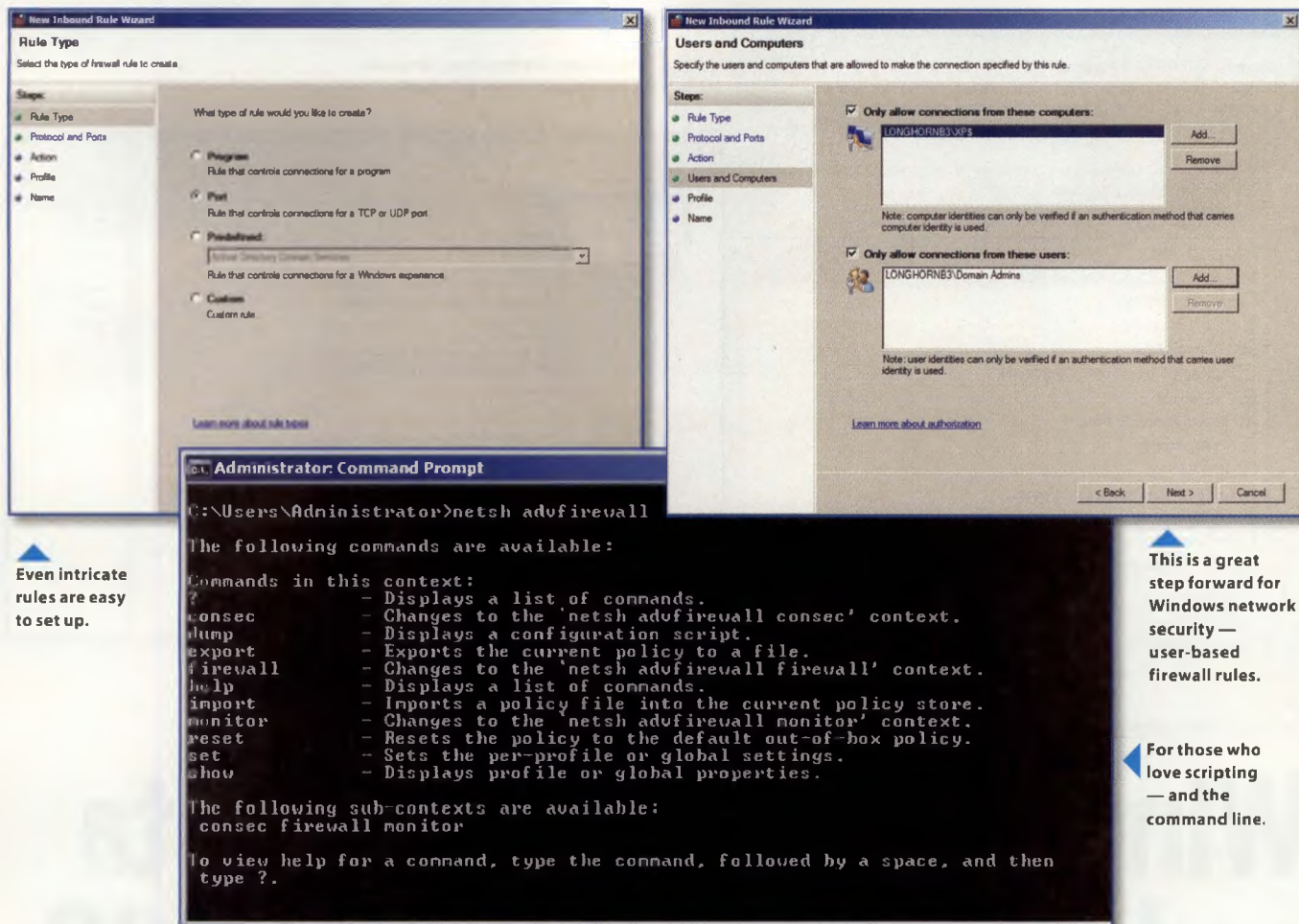
protect (and also offers a button to Restore Defaults). All the new, juicy stuff, however, is in the new Microsoft Management Console (MMC) snap-in, called Windows Firewall with Advanced Security.

In true Microsoft fashion, there are wizards that hold your hand every step of the way, whether you're creating an Inbound, Outbound or Isolation rule. It's also easy to work with, as you can filter the view on the state of a rule or which profile it applies to. As an aside, Exceptions in Windows XP has been renamed Rules (which is more consistent with firewall terminology). The new MMC can also be used to change firewall rules on a remote system, provided you have sufficient permissions.

The new UI also has a monitoring node that allows easy access to active firewall rules, active IPSec connection rules and IPSec associations. For those who think a GUI is for cowards, there's the command line tool 'netsh advfirewall context', which allows full control over every setting without a wizard in sight.

OUTBOUND FILTERING

One thing you won't see with Windows Firewall is the type of dialog box common with other host firewalls: 'Program XYZ needs to access the internet on port 12345 for ABC reason — do you want to allow this?' This might be fine for a geek who either knows what's going on, or is at least savvy



Even intricate rules are easy to set up.

This is a great step forward for Windows network security — user-based firewall rules.

For those who love scripting — and the command line.

enough to investigate and find out what's happening. But for average users, this is just an annoyance that might as well be written in Klingon (How do I get rid of it for good? by clicking 'allow always'.)

By default, all unsolicited incoming traffic (meaning it's not in response to traffic started by this computer) is dropped unless allowed by a rule. In contrast, all outbound traffic is allowed unless blocked by a rule. The platform for host-based firewalls has also changed; Vista now offers the Windows Filtering Platform (WFP), which is essentially a set of public API hooks that third party firewalls will use to work with the new TCP/IP stack.

WHO ARE YOU?

The coolest thing in this new firewall, at least for businesses, is Active Directory user and group account awareness for building firewall rules. This means you can give certain user accounts a pass

through the firewall, whilst blocking others.

Also new is the ability to define a range of ports for a rule, rather than just a specific port number. The list has to be comma separated, ie. 105, 106, 107, 108 (not 105-108, which would have been better).

WHERE AM I?

In Windows XP, the firewall has two profiles — Standard and Domain — where the former is used in all untrusted settings, and the latter when connected to the protected corporate LAN.

Vista replaces this with three profiles (Domain, Private and Public), which will suit the way most (laptop) users work. Which profile is activated depends on the setting; if the system has authenticated to an Active Directory Domain Controller, you'll automatically get the Domain profile. The first time you connect to any other network you will be asked whether this is a trusted environment, such as your home

network, which will give you the Private profile.

Public is for wireless hotspots or other situations where you definitely don't want to allow any unsolicited traffic. Be aware that you have to be an administrator to be able to select the Private profile.

In previous versions of Windows, Group Policy processing relied on the Internet Control Message Protocol (ICMP), essentially the Ping command, to determine the speed of network links. If a link is detected as slow (think VPN or dialup), certain Group Policy settings aren't updated, as it would take too long. This approach has drawbacks, however, especially if firewalls block ICMP packets, as Windows firewall does by default.

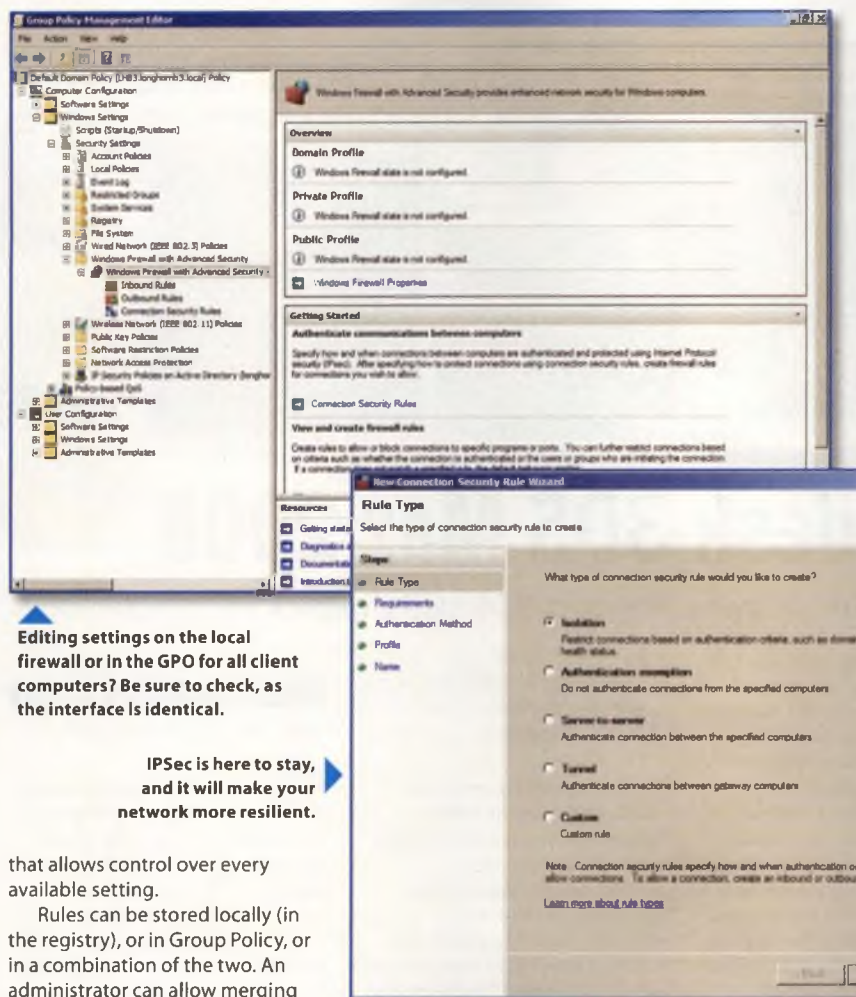
Vista's firewall uses a new service, Network Layer Awareness (NLA), which doesn't rely on ICMP to determine what kind of network it's connected to. Every new network is assigned its own Globally Unique Identifier (GUID).

NLA also handles another common scenario, where a laptop is hibernated with the domain profile active, taken home, and then woken up in a home network. The Network Profile Service (NPS) notifies the firewall that a different network is connected and, within 200ms, the profile is changed. Before this change has been made, and also during Vista's boot sequence, no network traffic is allowed at all.

If you have two active network interfaces — a laptop with both a wired and wireless LAN running, and one connects to a public network — the firewall profile will be set to public, even if the other NIC is connected to a domain.

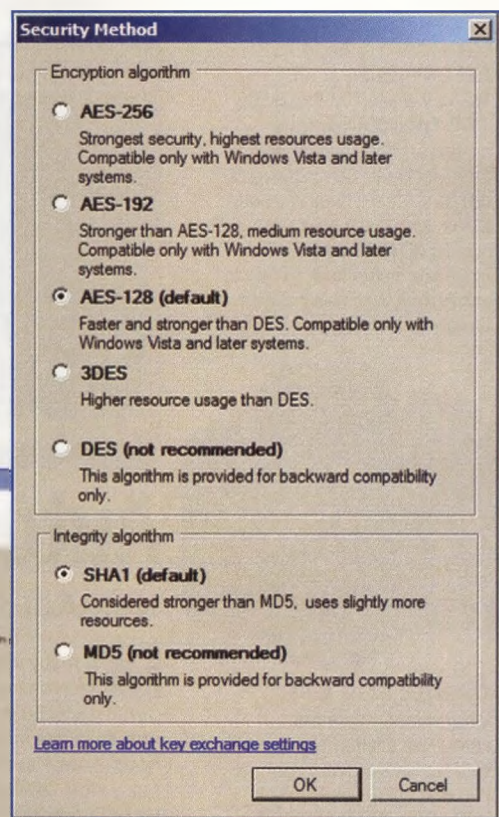
RULING POWER

The best type of firewall rule to use is a Program rule. This only opens the appropriate ports while they're in use and only for that program. A Port rule, on the other hand, opens the specified ports permanently. There's also a Custom rule wizard



Editing settings on the local firewall or in the GPO for all client computers? Be sure to check, as the interface is identical.

IPSec is here to stay, and it will make your network more resilient.



For those really 'secret' secrets, there's extra-strong encryption.

that allows control over every available setting.

Rules can be stored locally (in the registry), or in Group Policy, or in a combination of the two. An administrator can allow merging with local policy, or only allow Group Policy rules. Rules can be exported from one PC and imported on another.

There are also predefined addresses for Default Gateway, DNS and WINS servers (and the like) that can be used in rules. These are replaced with whatever their current IP addresses are on that particular PC. Rules can also be configured to apply only to a specific interface (LAN, Wireless or VPN for instance), or to all interfaces.

But the icing on the cake is the new interface for configuring the firewall in a Group Policy. In XP, there's a cryptic list of settings, each of which can be enabled or disabled. In Vista and Longhorn, the user interface for configuring GPO-controlled firewall settings is the same MMC snap-in as for local setup. This is a brilliant move and should minimise configuration mistakes, especially important when you're altering the

configuration on thousands of client computers at once through Group Policy.

Speaking of GPO settings, they're applied differently in Vista. If you start a laptop at home, log on locally and then VPN in to the corporate domain, computer-based Group Policy settings will never be applied in XP, as they're applied during boot time. In Vista, they will be applied over a VPN connection, along with User GPO settings. This refresh of GPO settings also takes place after resuming from hibernate or standby.

DO YOU FEEL ISOLATED?

One thing Microsoft has been pushing for network security over the last couple of years is Server and Domain Isolation. This is essentially using IP Security (IPSec) to authenticate computers (not users) in your network, based on trust. Encryption of traffic is optional, due to its load on CPUs,

and is used only for highly sensitive servers.

With IPSec, we can limit access based on computer accounts. For instance, only HR computers can access the HR server, or only computers with domain accounts can access any servers in the network. This can be used in both XP/2003 and Vista networks using only AD authentication; no public key infrastructure with digital certificates is necessary (but a PKI can be used if there is one).

This used to be difficult to set up, because there had to be exceptions for network service servers, DNS, WINS etc. In a large network, there had to be several hundred of these rules, but due to a patch for XP and built-in functionality in Vista providing 'fallback to clear', you can often get away with a handful of rules, even in a huge network.

The new firewall in Vista makes it exceptionally easy to configure this type of protected network,

partly because there's a specific wizard for isolation rules. And partly because firewall and IPSec filtering is all done in the same interface, which eliminates conflicting rules. On the topic of IPSec, if you have a Vista/Windows Server 2008-only network, there are several stronger encryption protocols on offer. Advanced Encryption Standard (AES) now comes in 192- and 256-bit flavours and AES 128-bit has replaced 3DES as the standard. Other goodies are a host of new Performance Monitor counters and remote management (with sufficient administrative permissions).

Service Hardening is also new in the Vista firewall: this is a set of default rules that block system services from communicating in ways they shouldn't normally.

Overall, the new Windows Firewall has gone from being adequate to comprehensive for home and small business computers. The new control capabilities will also be most welcome in larger networks. **ETC**

**ENTRY SLR**

The 12.2-megapixel Canon EOS 450D digital SLR camera is pitched at users upgrading to their first digital SLR. Although it can be set to full manual mode, it also comes with plenty of help for SLR first-timers, with automatic modes such as Sports and Portrait. Available in April.

www.canon.com.au

**DRIVES FOR DVRs**

Meanwhile, Seagate has announced a family of purpose-built HDDs for Digital Video Recorders (DVRs) with initial capacities planned up to 1TB. The PipelineHDSeries hard drives will allow DVRs to capture up to 200 hours of high-definition (HD) television or 1,000 hours of Standard Definition television. To be available in the second half of 2008.

Seagate.com

GAMERS SECURITY

PC security software created specially for gamers by Danish company BullGuard has been released locally by Mindscape. The software protects online gamers without interrupting their game-play (no pop-ups or slowdowns) so users no longer have to suffer from annoying 'pings' from their firewall or loss of gaming speed.

BullGuard Internet Security: Gamers Edition costs \$89.95 for a one-year subscription.

mindscape.com.au



Autodesk 3DS Max 2008

Now Autodesk owns Maya, is 3DS still the pick for rendering?

For many years, 3DS Max has been one of the big three professional 3D packages. So when Autodesk, the program's maker, bought out Maya, its largest rival, many worried whether the future for both products was assured.

Autodesk said it was, taking great pains to ensure the message was loud and clear: each product had its own committed user base and strengths, and neither Max nor Maya was going to be abandoned or scaled down. However, it must have occurred to the company that it's now using twice the development effort by updating two programs serving the same market, so they need to choose between spending twice as much or upgrading at half the pace.

You could suggest that Autodesk has taken the second route — not much has changed in 3DS Max 2008. There are a few tweaks to the modelling tools allowing you to edit polygons, edges and points without constantly going through menus. There's a new way to preview shadows in the viewports interactively, so you don't have to spend hours doing test renders. There are also some decent tweaks to rendering in Mental Ray.

What it's lacking is a killer feature that will change the way you work, a flashy one-button tool to bring to life photo-real humans, or a one-stop shop for video game creators. They weren't in the last release either. It's easy to assume

CONTACT Autodesk
ONLINE www.autodesk.com.au
MARKET Everyone
PRICE \$5,492

✓ Performance for easier editing.

VERDICT ★★★★★

✗ Some tools still need attention.

the development team was so overstretched by the need to update both programs that there wasn't time for big ideas.

That said, the industry has changed — in films, TV, advertisements and games the emphasis has shifted away from the use of flashy one-off tools towards higher levels of complexity. So instead of accurately modelling a fish, the challenge is to model a shoal of 1,000 fish, or a battle between 10,000 Orcs.

On top of this, individual models are becoming more complex. Modelling applications like ZBrush routinely produce models of a million polygons or more (and version three allows you to work in billions). Such models place an enormous strain on even the best graphics cards and the fastest processors.

The requirements of 3D have moved beyond the abilities of the hardware, and packages like 3DS Max must fill the gap between what it can do and what clients expect.

This is what Autodesk has been doing for the past two years. It has rewritten much of its underlying code, and you can now manipulate and work more interactively with large objects and object groups.

Being able to apply materials to thousands of objects in seconds, or

having a six-million-polygon scene which automatically adjusts so you can rotate it at 50fps won't make many headlines, but it will make complex 3D projects faster and less infuriating for the artist.

3DS Max has become smoother and faster. Huge scenes generated by particle systems, plus character animation and architecture are more manageable, and there's more: you can now interactively see shadows from all types of light and simulate architectural materials in the viewport. There are also some important (Mental Ray) rendering additions, including better ambient occlusion, improved indoor lighting and a camera dialog for control of shutter speed, exposure and so on.

This focus on performance is great, but soon Autodesk will have to add big ideas and improve more obvious tools. Max needs to make up ground from packages like ZBrush and Mudbox. It needs to bolster its simulation tools and learn about landscape rendering from landscape design packages. In concentrating on substance, they've ignored vital style. If you can't wait for that new flashy feature, 3DS Max 2008's new script editor interface is a great step forward that makes it far easier for you to write new tools for yourself.

Christian Darkin

BitDefender Total Security 2008

This internet security market ain't big enough.

BitDefender Total Security 2008 is a Swiss Army Knife of internet security applications. On the other hand, its user interface just isn't slick enough to compete with other alternatives. It looks bland and wastes too

much space. However, you can't judge a security suite by its cover, so let's take a look at the feature set.

Our first antivirus test revealed BitDefender's antivirus coverage is good. Although initially it found only 598 viruses out of 634, changing the protection level to aggressive brought this figure to 632. It must be noted that in most cases, leaving the protection level at default is perfectly acceptable.

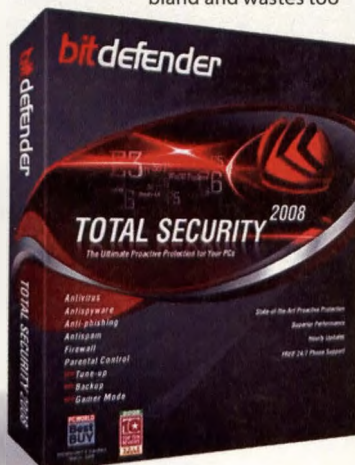
One excellent feature of BitDefender is its parental control component. It's as good as, if not better than, what you'll find in F-Secure and other products. But you need to remember to enable the heuristic web filter to begin filtering web sites.

Anti-phishing performance is average and the filter let through some fake PayPal sites. On the bright side, the privacy control feature isn't too bad.

Spyware is taken care of automatically, although we have a feeling a few pieces of harmless adware managed to sneak by the detection mechanism during testing. But the firewall deserves a special mention for its ease of use and performance.

BitDefender's other features include an antispam filter, a system tune-up and a file backup utility. Although not as shiny as some other security suites, we were very happy with its performance.

Peter Sbarski



CONTACT	Bitdefender Australia
ONLINE	www.bitdefender.com.au
MARKET	Everyone
PRICE	\$87.44 (three users)

✓ Light resource use; overall features.

VERDICT ★★★★★

✗ Anti-phishing performance.

F-Secure Internet Security

Yet another slick performer vying for the top spot.

Internet Security 2008 from F-Secure is a simple yet capable and mature performer. It's a fully-featured security suite packed with antivirus, antispyware, firewall, anti-phishing, antispam and parental control components. Unfortunately, it's let down by a few small problems.

Our first step was to throw Internet Security 2008 at a horribly infected test system to see how it would fare. Most of the adware and spyware junk was found and removed immediately. However, virus tests were a little more interesting. In the first test the program found 625 out of 633 viruses. In the second test it only found 218 out of 697 viruses, which took us by surprise. We were expecting F-Secure

to find at least 680 viruses.

After a little digging we realised F-Secure Internet Security 2008, like most other security suites, is set to scan a limited range of defined file types. Because of this, F-Secure skipped over a large number of infected files. Once we set scanning options to scan 'all files' the situation improved and 686 viruses were found. This result is identical to that of Kaspersky 7.0.

Performance-wise F-Secure Internet Security 2008 is quite impressive. Scan speeds are fast and, although there are a fair few processes spawned, the overall memory consumption isn't high.

The developer claims the parental control feature has been improved from the previous

version. It has been enhanced but it's still a little too simple. However, there's a nice time lock feature and a strong web site filter. In fact, F-Secure Internet Security 2008 has one of the best HTML filters we've tried. Anti-phishing performance was average, but the firewall was fair. In general — a good product.

Peter Sbarski



CONTACT	F-Secure
ONLINE	www.f-secure.com
MARKET	Everyone
PRICE	\$135 (three users)

✓ Parental control; ease of use.

VERDICT ★★★★★

✗ Spam/anti-phishing performance.

RUGGED INCREASE

LaCie's unmistakable orange Rugged All-Terrain Hard Disk just keeps getting bigger. It's now up to 320GB. Used for data backup and data transfers between computers, the Rugged is available in USB 2.0, FW400 and FW800 versions for speedier transfers. \$399

www.lacie.com/au



PRINTER FOR PROS

Epson has released the new Stylus Photo R1900 A3+ printer for professional photographers. So what makes it so good and so expensive at \$1,099? Things like its UltraChrome Hi-Gloss 2 ink which comes in eight individual cartridges including orange for skin tone reproduction.

www.epson.com.au



OLYMPUS TOUGH 790SW

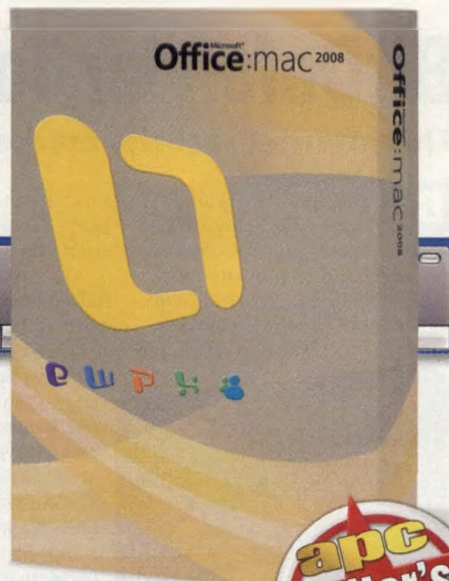
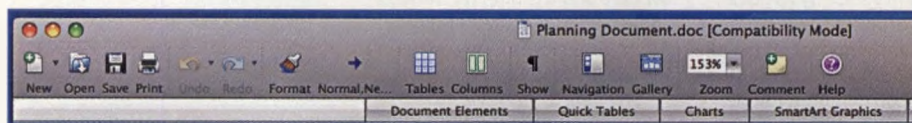
Want the ultimate rough-and-tumble camera? Olympus has launched 'Tough' cameras which are waterproof in their naked form and guaranteed to work at temperatures right down to -10 degrees (great for snow photography, apparently, where other cameras may literally freeze up). A range of colours are available. \$499

www.olympus.com.au

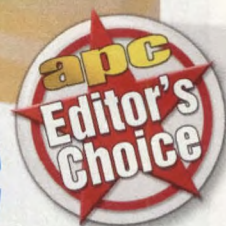




Office for Mac isn't a direct replica of the Windows version but rather a separate suite in its own right. Read on to find out about the differences!



Office 2008 for Mac



It's been four years since Microsoft's last foray into the Mac Office sphere. APC gets hands-on with the 2008 update.

When most people hear that Microsoft makes a version of its Office suite for the Mac they expect it to be a feature-for-feature, screen-for-screen clone of its Windows counterpart. While they might be from the same family, they're more like distant cousins than siblings. The Macintosh Business Unit at Microsoft sometimes borrows from its counterpart but it is a very different, and, in many ways, superior product. Thankfully, after four long years, Office is finally a universal application, meaning that it no longer relies on Apple's PowerPC emulator, Rosetta, to run.

In the past, one of the chief criticisms levelled at Mac users was that their documents weren't compatible with those produced on Windows systems. That hasn't been a concern for some time, but it's one of the four pillars upon which Office 2008 for Mac is built. In our testing, not one document we opened that had been created in the last couple of versions of Office for Windows had a problem. The new open XML format is supported, as are most of the previous Mac and Windows file formats.

The redesigned interface of Office 2008 is built on three other pillars — discoverability, professional output and growth. In other words, Office 2008 is designed to be easy to use, deliver great looking documents, presentations and reports, and make it easy to find advanced features as you need them. The Office 2008 applications are far cleaner and less cluttered than their Windows relatives.

In the Microsoft tradition, there are a number of different versions of Office. The cheapest version is the Home and Student Edition. It's a bargain at \$229 and includes Word, Excel, PowerPoint and Entourage for up to three users in the same household. Next is the plainly named Office 2008 for Mac. It includes the same applications but there's only a single licence and it costs \$649. This version's pitched at business users. Completing the trilogy is the Special Media Edition. It has the same base set of apps but throws in the Microsoft Expression Media digital asset management system.

To test Office 2008 we installed it on a couple of systems — a MacBook Pro with a Core 2 Duo processor and 4GB of memory and

an older iMac G4 1.25GHz with 1GB of RAM. Both Macs were running OS X Leopard 10.5.1. The minimum requirements are a G4 500MHz with 512MB of memory and 1.5GB of disk space.

Previous versions of Office were installed by simply drag/dropping the installation folder to the Applications folder and starting one of the Office programs. While reasonably easy, it was a pain for system admins as there was no way to manage installations remotely. Office 2008 uses Apple's standard installer. This was in direct response to feedback Microsoft received from its 'Customer Council' made up of users and IT administrators.

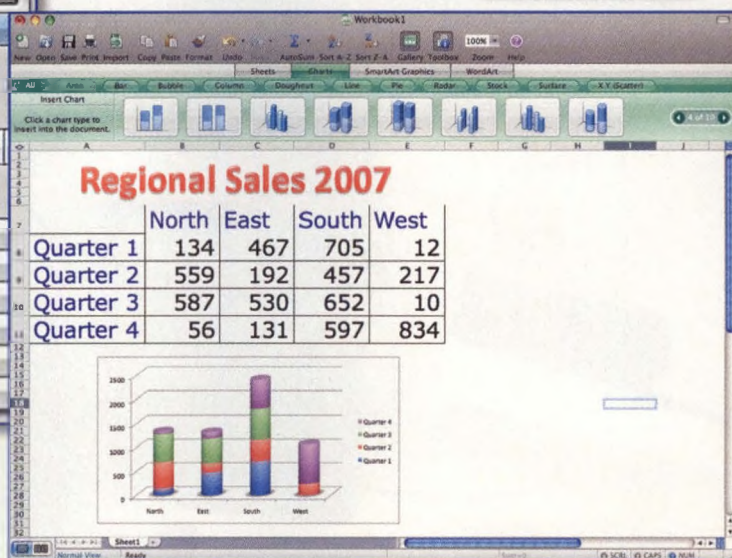
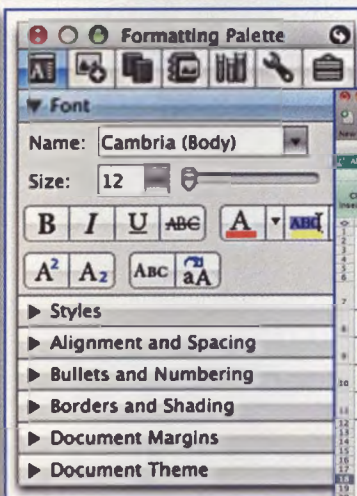
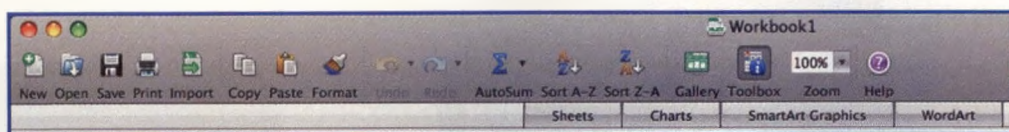
The new installation, using Apple's .pkg system, was easy to use and was simply a matter of following the prompts. Assuming you're sitting at the computer during the installation, hitting the Next buttons as they appear, installation takes only 20 minutes. Once Office 2008 is installed, the installer searches for previous versions of Office and removes them.

PowerPoint has undergone a significant review. The Elements

Gallery, a row of buttons below the main toolbar, gives quick access to oft-used features such as the slide themes and layouts and opens up one of the new features — SmartArt Graphics. Simply enter a set of boring old bullet points, open the SmartArt Graphics menu and choose a layout. The bullets will be quickly and easily converted to a slick graphic.

That theme of simplifying complex tasks is continued with the new Formatting Palette. Common tasks such as font changes, slide backgrounds, lines, transitions and all those other bits of eye-candy are in a single, convenient tool that's clearly labelled and easy to use. In comparison with Office 2007 for Windows' Ribbon, PowerPoint on the Mac has a streamlined interface that puts the tools you need close to hand.

If there's a de facto standard for sharing documents then Word is that standard. The main change introduced in this new version is the Publishing Layout View. Working in this mode changes Word from a word-cruncher into a desktop publishing tool. Whereas Windows users have had Microsoft



Publisher in their arsenal, Mac users have been left high and dry by Redmond. The Publishing Layout View fills this piece of the puzzle.

What the Publishing Layout View does, with its array of dazzling templates and other interface changes like the Elements Gallery and new toolbars, is take a bunch of features that have been a part of Word for a long time and liberate them so you can use them easily without having to memorise an arcane set of menu options.

If the Macintosh Business Unit's goal is to be all things to all people then this new version of Word is getting close to achieving that.

Now let's face it — spreadsheets aren't the coolest arrow in your quiver of applications. Excel gets the same facelift as the other productivity apps with a new default toolbar and the Elements Gallery. It continues the theme of making common actions more accessible by putting tools such as sorting, charts and commonly used mathematical functions a single mouse click away with clearly illustrated and labelled buttons.

As you'd expect, this new release does all the usual stuff like letting you enter numbers

CONTACT Microsoft
ONLINE www.microsoft.com
MARKET Everyone
PRICE From \$229

Great interface; compatibility.

VERDICT ★★★★★

No VBA support.

and carry out an astonishing variety of different examples of number-crunching witchcraft. Where Excel really excels is making those boring columns of data look great so that they can be used in reports and presentations. Adding a graph and some WordArt is a single click away through the Elements Gallery.

Office for Mac lacks one feature that will cause some switchers plenty of grief — there's no support for Visual Basic for Applications. That means that macros created in the Windows versions of the Office applications won't run on a Mac. Sure, there's Apple Script support but there's no translation tool. On the upside, Office now supports a swag of Automator actions so you can automate some Office actions. For example, there's an action that'll convert the text in a document to audio and send it to your iPod.

If you've used Apple's iWork suite then you'll see that Microsoft has looked at that (still immature)

suite and realised that simplifying things and exposing the features you already have is of greater value to users than adding more features that are hard to find (and only needed by a small percentage of the user population).

Entourage is to Mac Office what Outlook is to its Windows counterpart. Chances are that if you're considering a move to Entourage then you'll be moving from Apple Mail. Updating 1.6GB of Apple Mail to Entourage was very simple following the Entourage Setup Assistant and took less than 30 minutes. Not only were our messages, complete with attachments, migrated, but all our mail server settings and mailbox rules came across as well.

One major plus is that the Entourage toolbar can now be customised. The previous version had the 'Model T Ford' of toolbars. However, while you can add and remove buttons, you still can't attach a custom button that runs an AppleScript you've created.

Corporate users contemplating a move to the Mac will be pleased to note that Exchange support has been added, making it easier to switch or to support a mixed environment with Windows and Mac clients.

One of the hassles with large applications like Entourage is that getting a consolidated view of today's events can be a hassle. It seems a little ridiculous to open the entire database just to look at a small subset of the data. The new My Day application can be launched from either within Entourage or from the Applications folder, and provides a snapshot of the day's appointments and tasks. It reminded us of the Today screen on a Windows Mobile PDA.

Messenger for Mac gets a minor facelift although we'll have to wait for the biggest changes. The version of Messenger that shipped with Office 2008 (6.0.3) isn't the latest. Version 7 is in testing but not ready for release to manufacturers. Video chat, a long-awaited feature, will be added during 2008. It'll go to corporate users first, supported with the Office Communications Server, and then to personal users.

Anthony Caruana



Premium views

Nick Race peers at top-notch monitors from the biggest players in the market.

One component of a PC system that tends to hang around through more than one upgrade is the monitor. CPUs and motherboards come and go, but a good-quality screen will be gracing your desk and saving your eyes for years at a time. Long gone are the days of cheap 15in fuzzy CRTs that give you a monstrous headache after an hour or two, and we've waved goodbye to smeary, blurry LCD monitors that hummed ominously and made movies and games look like abstract art. It's almost a safe bet that the majority of LCD monitors you can pick up, even the cheapest screens, tend to do a pretty good job.

But that's not how we do things here at APC. We've gotten our hands on the crème de la crème of LCD monitors, from the reasonably priced to heart-stoppingly pricey — 22in toddlers to 30in monsters. We've got swing arms, wall mounts, composite, component and woofers, cameras, HDMI, remote controls, pneumatic hinges, automatic brightness adjustments and some seriously high pixel counts. After all, if you're going to be using it for a long time, then you might as well buy the best.

We received monitors from some of the biggest names in LCD: Acer, backing up from an Editor's Choice in our last LCD roundup,

BenQ, ASUS, Dell, HP, Chimei, Philips, NEC, Samsung & Viewsonic. We specifically asked for flagship monitors from each of the vendors with no price limit. The only proviso was that they be in a wide-screen format (either 16:10 or 16:9). Furthermore, there was no size restriction, but the smallest screens we received were 22in.

Premium LCD monitors which attract a higher price than others in the market tend to have some pretty obvious differentiators. Firstly, they tend to have faster refresh times, typically in the 8ms and below category. Some earn the premium label by providing a wide variety of inputs, or a stunning form

factor. Premium 'pro' models offer increased colour gamuts, colour correction systems and very high contrast ratios. Then there's the wow factor: when APC staffers wander by and stop to take a look.

HOW WE TESTED

Monitors were connected to a PC running Windows Vista Ultimate (Aero) on an ASUS 8800GT 1GB via a DVI-D cable with HDMI adaptor as appropriate. Screens were tested using DisplayMate, HD video source and scrolling text rendered via IE 7. The screens were also put through their paces with a quick round of Quake 4 running at the screen's native resolution.



WE'VE GOTTEN OUR HANDS
ON THE CRÈME DE LA CRÈME
OF LCD MONITORS

Samsung 305t

30in \$2,399

The 305t has come through the doors of the APC Labs in the past, and it's interesting to see how much the rest of the market has moved on in less than a year since it first appeared. Truly impressive on first view, it seems Samsung need to come up with something new to get back in to the premium 30in market.

The 305t is a 30in LCD monitor running a native resolution of 2,650 x 1,600 and a stated contrast ratio of 1,000:1. Accordingly, the contrast on the Samsung is great, with deep blacks and a very capable handling of colour gradients; there's not much to dislike. The viewing angles on the Samsung are also one of the better results, with very little

fading even at relatively extreme angles. It would work well in a collaborative environment (or as a display monitor).

It's simply designed with a basic stand offering tilt and swivel and height adjustment. Where it starts to fall behind is in the extras. With only DVI connectivity (and a USB hub) the 305t lacks many of the features available on Dell, at around the same price.

If you really want a plain Jane (but big) monitor, the 305t still has it. However, for around the same money, the Dell has much more flexibility and the same visual real estate.





Acer P241W

24in

\$899

The P241W had some big shoes to fill after APC's last LCD roundup, and we're pleased to say they've done a pretty good job filling them. The P241W takes some new design cues from Acer, using some nicely bevelled, sharply designed high-gloss plastics for the screen surround.

This model supports a native resolution of 1,920 x 1,200 at 24in, with a refresh rate of 2ms. The colours are crisp, clear and even, though colour variation is quite obvious with different vertical viewing angles (definitely more than expected from a 160deg stated spec).

The stand design is a little bit on the disappointing side, with no vertical

adjustment, and a 'sticky' friction held tilt.

Inputs consist of DVI, HDMI and VGA D-Sub, and switching between them involves going through the menu. It's not tricky, but it is annoying if you switch between inputs (let's say for a games console or high-def player and then back to your PC with any regularity).

The Acer P241W is an outstanding panel let down by some design issues. With a better stand and an input selection button, this could be an outstanding screen.

If neither is an issue for you, then there's no reason why you wouldn't be very happy with it.



\$2,229

25.5in

NEC MultiSync LCD2690WUXi

NEC's 2690WUXi is definitely an ugly duckling. Though it's solid and square, the NEC's display quality more than makes up for its lack of grace. The unusual panel size at 25.5in isn't something we've seen before, with most screens tending toward 24 or 26in. The stand is nicely adjustable, though the screen does wobble around more than we'd like when the desk gets bumped. The 2690WUXi has a unique, and surprisingly effective feature; it detects the ambient light of your work environment, then adjusts its brightness for optimal viewing comfort. Obviously, it's not going to help if you're

sitting next to a floor to ceiling window in the middle of summer, but the adjustments the monitor makes based on office lighting during day and night cycles is impressive.

The NEC's native resolution is 1,920 x 1,200, with a contrast ratio of 800:1. Though we see the same resolution in smaller (24in) panels, it's still a comfortable res to work in on a screen this size. Video and fine detail playback on the 2690 were all impeccable, with great black levels. There's lots to like about this NEC: it's got a great image quality, features to help you work in brightly lit environments and basic connectivity.



BenQ X2200W

22in

\$649

The X2200W is a new screen from BenQ specifically tailored for the gaming crowd, but that doesn't mean it's purely for the mouseketeers. The 22in monitor runs at a native resolution of 1,680 x 1,050, a standard resolution for most 22in monitors on the market, though sadly just below the resolution for HD video. Contrast ratio is 1,000:1, which does seem inflated compared to lower-rated LCD monitors in this round-up.

It's not all bad news, though; the X2200W includes some excellent technology for a really good-looking image. The response time in the most often quoted grey to grey is 2ms, while BenQ also lists average response

at 5ms and a new measurement of which we're unfamiliar of 'Motion Picture Response Time' at 8ms. It may be marketese, but the X2200W shows clear, crisp and bright images even in very high-speed scenes, usually only seen on CRT or plasma — very impressive. The screen offers six viewing modes, which change brightness and contrast depending on your content. There's the usual text, video and photo mode as well as racing game and action game modes.

The BenQ X2200W 22in monitor includes VGA D-Sub, DVI and HDMI with HDCP, so PC connectivity and entertainment is covered. Audio and headphone outputs take care of the audio component of HDMI.



Philips 220XW

22in \$899

The inset bezel on the Philips 220XW is different to most screens we've seen, and after a few hours in front of it, you learn to ignore it. At first, though, it's a slight optical illusion, it seems like the image is set further back in the monitor. Not a big deal, but we noticed it.

Measuring in at 22in with a native resolution of 1,680 x 1,050, the 220XW misses out slightly on making the cut for full HD video, though downsizing only 30 pixels out of more than 1,000 isn't too noticeable. The screen showed some excellent contrast, with nice, rich blacks and little gradient in darker areas; it's quite a natural-looking image,

though the reflective screen coating works against it sometimes in this arena. The screen's ergonomics aren't excellent, with the stand's only adjustment being tilt. Though 22in monitors don't tend to have the highly engineered stands of bigger screens, the Philips' still pretty basic.

There's the usual connectivity here: DVI, VGA D-Sub and HDMI with HDCP across the digital inputs, and our video and text tests did very well, with little noticeable ghosting or blurring. It's got a nice, even colour across the whole screen, but we tended to run the 220XW with the brightness ratcheted right back in Economy mode to save our eyes.



Chimei CMV 222H

This is the second time we've looked at the CMV 222H from Chimei — but don't worry, we're not wearing rose-coloured glasses. The 222H is a decent monitor, at a good price, with a huge amount of connectivity options.

The 22in screen runs a native resolution of 1,680 x 1,050, just shy of HD video's 1,080 vertical pixel count. The 222H includes a side-mounted card reader, and a Z-shaped stand which allows fine adjustment with tilt and swivel (but it really gave us problems out of the box). The CMV 222H includes connectors for component video, VGA D-Sub, S-Video and HDMI, but the model omits a DVI plug. It's not a huge problem, as DVI-to-HDMI adapters are not too hard to get a hold of,

but it's something to be aware of when bringing one home from the shops.

The screen's display quality is so-so. There's little to no noticeable ghosting or blurring during video and fast image playback, which is on par with some of the best screens here, but unfortunately there are some slight problems with evenness of lighting across the screen, as well as blurriness on small text and fine detail on white backgrounds.

Some slight flickering was noticed on the screen, but this was not apparent to others, so some users might be more susceptible to this than others.



22in \$599

ASUS PG221

22in \$899

Sound in your screen, with subwoofer no less. The PG221 includes a 2.1 sound system in the monitor's stand: a novel idea, and a step up from the plastic grilles in many LCD panels. Touch-sensitive buttons in the screen's bezel give access to the menus. We did have problems registering touches from time to time, but as this unit was a well-worn demo model, we won't dwell on this.

The picture quality on the PG221 was good, with a clear image, good text reproduction and low levels of ghosting. There are no real complaints as far as the quality of the visual output of the ASUS monitor. The audio is a different matter, with the sub adding a huge blur to the bottom

end of most audio. It's a strange choice, as most home PC users would prefer a better set of speakers for audio, while office users would find the sub and extra expense of the audio inclusion a waste of money. The PG221 has a built-in 1.3-megapixel digital camera at the top of the screen, similar to many notebooks. It connects via USB, and the quality is fine.

We have mixed feelings about the ASUS PG221 — the image quality from the monitor is good, while the extras, including the touch-sensitive menu buttons and audio don't impress as much as we feel they should. Buy it because of its good picture; not because of a built-in subwoofer.





HP W2408H

The HP W2408H 24in monitor seems to have a feature set purely of its own. The screen runs at a native resolution of 1,920 x 1,200, a good res for a screen this size (as well as the most common), making text quite readable at the 50cm viewing range it needs.

Physically, the W2408H has a nice, neat black and silver finish, while the unit's stand can rotate to put the panel in portrait mode. Viewing angles were decent, but not quite 100% in our book, with viewing angles on the vertical fading on the screen rather quickly — you'd better make sure that you have it at the right height on your desk.

The W2408H had a great, vibrant image with deep black levels, though we found that text could display a little on the blurry side, with some faint purple tinges. A black screen showed some minor light leakage at the top and bottom, which may be noticeable to you if you're a movie buff.

Connectivity includes an HDMI port but no DVI (though adapters are relatively easy to come by), with a backup D-Sub VGA connector. There's no analogue video connectivity to make it truly flexible.

Overall, the HP W2408H is OK, though there's better deals for screens with less issues around the same price.

24in \$999



\$1,289

27.5in

Viewsonic VX2835wm

Viewsonic's 27.5in champion, it has to be said, is really an unlovely screen. Thankfully, the questionable design extends only to the exterior of the monitor, as its actual display capabilities are excellent.

The VX2835wm is a 27.5in (28in in marketese) panel with a very dated external appearance. Looking more like a budget LCD TV than a premium PC monitor, the Viewsonic sits on a non-adjustable stand, with only tilt to make your life more comfortable.

Visually, the VX2835wm is great, but only once you've delved into the monitor's settings to get it looking right. Out of the

box, the display looks pretty bad, but a few minutes in the menu tends to fix things up dramatically. The output is crisp, clear and bright, with a good black level as well.

There's almost no discernible ghosting or smearing, while text is sharp and readable at the native resolution of 1,920 x 1,200.

The Viewsonic does away with DVI but includes HDMI (with an included DVI-to-HDMI cable), VGA D-Sub, component, composite and S-Video — quite a collection and all welcome additions.

The screen also includes a pair of built-in speakers; give them a miss if you value music or sound, but, as a freebie, they'll do.



Dell UltraSharp 3008WFP

30in

\$2,299

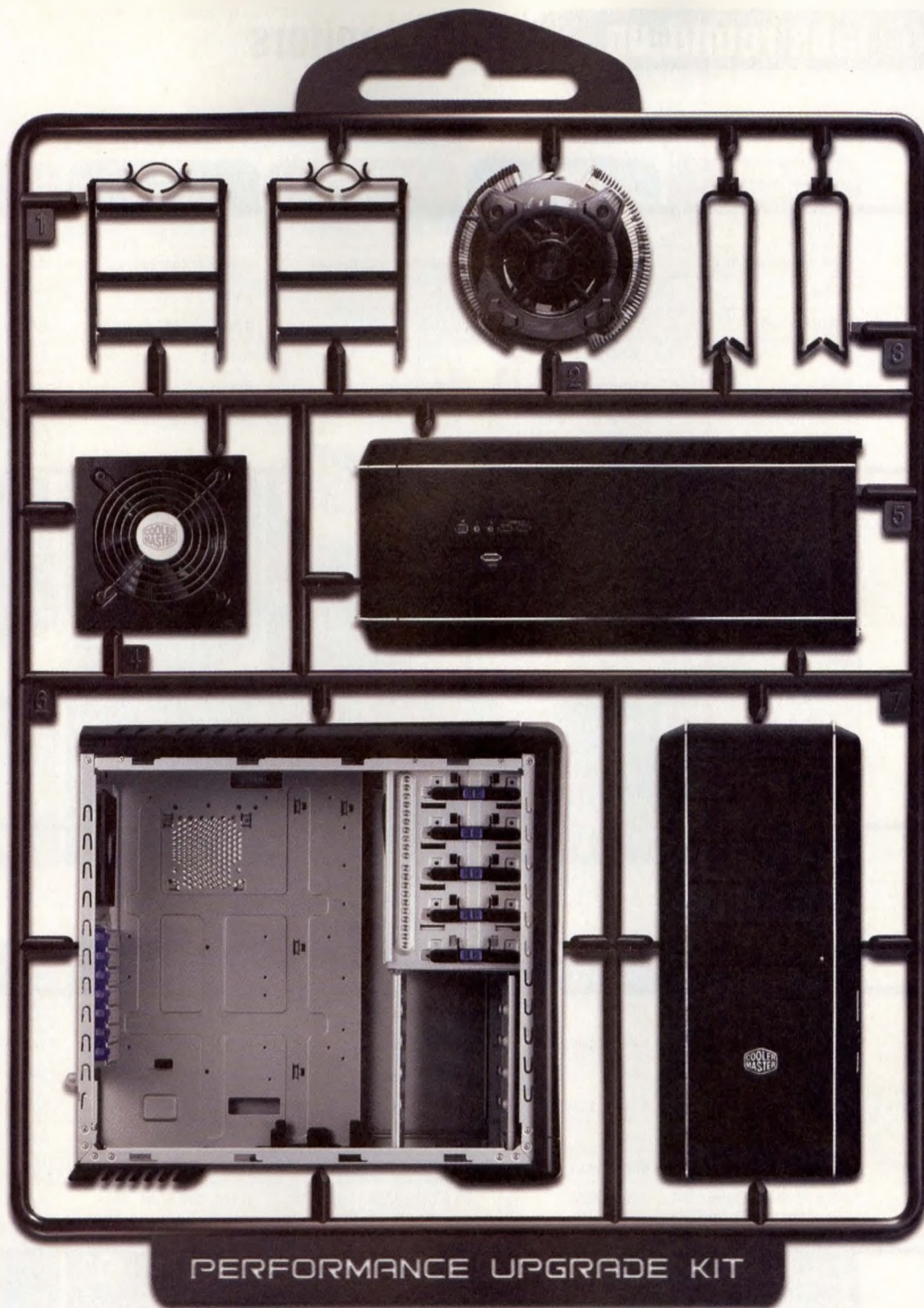
Dell's large wide-screen monitors have been very popular since they were introduced. With Dell's original 30in model selling for well over \$6,000, it's amazing to see that prices for big, high-quality LCDs have dropped so far. The 3008WFP is the new 30in monster from Dell's designers, and it's lacking much of the utilitarian greyness that marked earlier models. This screen is finished in brushed aluminium in a dark graphite tone, while the base is impressively made from thick, black vitreous glass.

Thankfully, it's just as impressive when turned on. The Dell 3008WFP has a clear, bright display, with a nice, wide viewing angle. With a screen of this size, you seem to

be able to get a good view no matter where you're sitting. Add to that a full complement of modern connectors, DVI (dual link), VGA D-Sub, HDMI, Composite, Component and DisplayPort (the main contender to HDMI in video display equipment); it's got all your bases covered. Dell has provided audio-out ports for connecting speakers if using HDMI or DisplayPort from an AV device, though it doesn't include speakers itself.

The native resolution is 2,650 x 1,600, so a hefty video card is needed to provide an output, especially if you're using 3D applications. Last but not least, the 3008WFP includes two USB 2.0 ports and a 9-in-1 card reader in the side of the screen.





CM 690



Set-up Guide:

1. Five removable HDD racks for easy maintenance and system upgrade
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	VIEWSONIC VX2835WM	DELL 3008WFP	SAMSUNG 305T	ACER P241W	BENQ X2200W
Price	\$1,289	\$2,299	\$2,399	\$899	\$649
Web	www.viewsonic.com.au	www.dell.com.au	www.samsung.com.au	www.acer.com.au	www.benq.com.au
Size	27.5in	30in	30in	24in	22in
Resolution	1,920 x 1,200	2,650 x 1,600	2,650 x 1,600	1,920 x 1,200	1,680 x 1,050
Contrast ratio	1,000:1	1,000:1	1,000:1	3,000:1	1,000:1
Brightness	500cd/m2	370cd/m2	400cd/m2	400cd/m2	300cd/m2
Connectivity	D-Sub; HDMI; S-Video; Component	D-Sub; DVI; HDMI; DisplayPort; S-Video; Composite; Component	DVI-D; USB 2.0	D-Sub; DVI-D; HDMI	D-Sub; DVI-D; HDMI; Audio Out; earphone
					
	Plenty of screen for the price.	Top-notch picture quality; heaps of connectors.	Clear, bright picture; good viewing angles.	Great colour and deep blacks.	No ghosting or smearing; good for gamers.
	Industrial design is lacking; very basic stand.	Sound works only with HDMI.	Low on features; less value for money.	Poor stand design; no easy input switching.	Basic stand adjustments.
Verdict	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆

	ASUS PG221	HP W2408H	CHIMEI CMV 222H	PHILIPS 220XW	NEC LCD2690WUXI
Price	\$899	\$999	\$499	\$899	\$2,229
Web	www.asus.com.au	www.hp.com.au	www.protac.com.au	www.philips.com.au	www.nec.com.au
Size	22in	24in	22in	22in	25.5in
Resolution	1,680 x 1,050	1,920 x 1,200	1,680 x 1,050	1,680 x 1,050	1,920 x 1,200
Contrast ratio	2,000:1	1,000:1	1,000:1	1,000:1	800:1
Brightness	350cd/m2	400cd/m2	300cd/m2	300cd/m2	400cd/m2
Connectivity	D-Sub; DVI; Component; Composite; USB; 2.1 Audio	D-Sub; HDMI	D-Sub; HDMI; Component; Composite; S-Video	D-Sub; DVI; HDMI	D-Sub; DVI
					
	Image quality is good in comparison.	Nice and bright.	Connectivity plus; adjustable stand.	Very bright with deep blacks and fine detail.	Great colour; deep blacks and good detail.
	Audio is less than expected; takes up loads of space.	Slight light leakage; some text blurriness.	Slightly blurry text; uneven lighting.	Very basic stand; attracts fingerprints.	Basic connectivity; wobbly stand.
Verdict	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★★

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Network & VPN security

Peter Sbarski takes the lid off the cauldron of network security devices.

Ensuring the security of your network is a primary concern of its management. Making sure remote nasties can't access private information, compromise your PCs or just create havoc with your users saves endless amounts of time and money, should the worst occur.

Of course, it's not always as simple as putting in a firewall and some security software, then letting it sit behind your virtual battlements; it's often the case

where remote users or home workers need to get in. That's where VPN is king. Virtual Private Networks allow remote users to connect to the network through an encrypted tunnel, granting access just as if they were sitting at a PC inside the (real) walls of the building.

This month, we've looked at three devices for network security, with three different usage models. First, the NetComm VPN1000

Mobile VPN Firewall is a portable, USB-powered and -connected device for remote users who need to tunnel into a business network. This tiny unit adds a second layer of protection for your network, filtering the user as they connect to your network via VPN.

Second on the list is the Linksys RV042 10/100 4-Port VPN Router, a core component for a small business network. This device can host VPN connections, allowing up

to 50 external users to connect to your network.

Last, but not least, is the D-Link DFL-260. It's a VPN firewall router, which enables VPN access into your network, while also acting as the primary firewall. The DFL-260 can inspect each packet passing through it to ensure they're correctly formed and routed, while subscription options allow anti-virus, web content filtering and more.

NetComm VPN100 Mobile VPN Firewall

Is your software firewall an adequate defence, or not?

Netcomm's VPN100 is a tool for dedicated road warriors. Oftentimes our folk can find themselves connecting to dodgy or unsecured networks in hotels, at our client premises or public places. Most of us run a software firewall but is that really enough? NetComm thinks that it's not — and this is where its Mobile VPN Firewall product VPN100 comes in. This lightweight network interface attempts to secure your connection by providing a Stateful Packet Inspection (SPI) firewall and IPsec VPN with DES/Triple DES encryption.

The device itself weighs about 70 grams and measures 128 x 18 x 62mm. It feeds entirely off the USB port which means that it doesn't need a power cable or a power supply. In fact VPN100 is so slim and light you can carry it in your pocket. Just don't forget to grab a USB cable to take with you.

The device has two ports: an Ethernet port and a USB port at the opposite ends of the device. This brings us to the first problem with VPN100. The Ethernet port on the WAN side supports 10/100MB Ethernet. The USB port on the LAN side, however, only supports a 10MB throughput because it runs on a USB 1.1 specification and not 2.0. This is a limitation these days, as it's feasible that the user could be connecting to the internet at faster than 10MB. You must also remember to carry the USB driver with you if there is a chance you'll want to use VPN100 on some other Windows system.

On the bright side, having an SPI firewall is very useful. Stateful Packet Inspection firewall checks whether a received packet is legit by analysing its header, contents and return address. It also closes off ports until a connection is required. SPI firewalls mostly help to protect against spoofed IP

packets and Denial of Service attacks, including SYN floods and Ping of Death.

VPN100 can also filter Java and ActiveX programs, cookies and block access to proxies. The user can further elect to block individual sites by URL.

The other major selling point of VPN100 is its IPsec VPN capability. Up to five tunnels can be created and used with VPN100. It's unlikely that you'll need much more than that. IPsec 56-bit DES and 168-bit Triple DES are available as a way of encryption for your data. For authentication, MD5 and SHA are available. Key management can either be manual or automatic (IKE).

Like any other router these days, VPN100 provides a decent web-based user interface. It's very basic but it's easy to navigate and configure. By default the integrated DHCP server supports 50 IP addresses. It's very easy to

increase the amount if there are more users, although given the assumed usage for this device you are unlikely to do that.

NetComm's VPN100 has a number of flaws such as its USB 1.1 specification and limited operating system support. However, for travellers who need a secure VPN tunnel back to their workplace and a good firewall, this isn't a bad solution. We would've preferred to see a few more routing options and a more sophisticated user interface with a much better logging component, but there is only so much we can expect from a device that weighs 70 grams. The other thing going against VPN100 is of course Wi-Fi. As wired Ethernet continues to become obsolete, so will VPN100.

VPN100 is a very basic router. Get it only if you are constantly on the move, require VPN as a means of connection and the places you go to still haven't gone wireless.

CONTACT NetComm

ONLINE www.netcomm.com.au

MARKET SMB

PRICE \$169.45

✓ Price; SPI firewall.

VERDICT ★★★★★

✗ USB 1.1; limited OS support.



Some limitations, but the VPN Firewall may suit those who need security on the go.



D-Link UMT Firewall DFL-260

Feature-rich security for the SOHO-to-SME set.

D-Link's Unified Threat Management (UMT) firewall DFL-260 is targeted at small to medium-sized enterprises as well as SOHOs. As expected, D-Link provides a subscription model (12 months from the moment you activate) for keeping the firewall automatically updated and in fighting condition against the worst of what the internet has to offer. Three content inspection services are available to the subscriber: IPS, Anti-Virus and Web Content Filtering.

The IPS service attempts to match and deflect known and unknown attacks by their signatures. In theory, IPS is supposed to detect harmful payloads, infection and exploits before they happen. The Anti-Virus component adopts stream-based scanning. It uses signatures provided by the Kaspersky Lab, and it can check VPN tunnels too.

The Web Content Filter is used to control, monitor and filter internet usage. Things like Java

applets, ActiveX objects and cookies can easily be stripped out. The administrator can also establish white and black lists to ban or allow access to web sites for different combinations of users and IP networks. Unfortunately, DFL-260 doesn't support IP blacklisting by specified threshold or IPS.

Mercifully, DFL-260 uses a hardware accelerator to increase IPS and AV performance. Although we couldn't evaluate the effectiveness of this hardware, we are prepared to believe that it makes a difference.

In terms of VPN, this firewall has just about everything one might need. It supports an integrated VPN client and server and has a dedicated hardware engine for driving large amounts of VPN configurations. The device supports IPSec, L2TP and PPTP, plus DES, 3DES, AES, and Blowfish for encryption. Up to 100 VPN tunnels can be used. There is also support for manual or IKE/ISAKMP key management/authentication via an external RADIUS server.

In terms of expansion and connectivity, DFL-260 is alright. It has four 10/100 Ethernet ports, one 10/100 port for WAN and another one for DMZ. It also features a serial port for all console hackers and administrators out there. DFL-260 supports 12,000 concurrent connections and up to 500 user policies. The official specification states that the overall firewall throughput is 80Mbit/s while VPN throughput is about 25Mbit/s. The figure for VPN assumes that 3DES or AES are used for encryption.

In comparison, its elder brother DFL-860 supports a 150Mbit/s firewall throughput, 60Mbit/s for VPN, 1,000 different user policies, 300 VPN tunnels and 25,000 concurrent sessions. It has seven Ethernet ports, two WAN ports and an extra DMZ port. The DFL-860 has a few other features which DFL-260 doesn't, such as OSPF protocol for dynamic routing, but for a small office, and even a medium-sized one, it's too much. A firewall like DFL-860 would be underused and too expensive. Hence, DFL-260 is

positioned very well for its market. It must be noted though that the MTBF for DFL-860 is 36,879 hours, versus only 21,571 hours for DFL-260.

DFL-260 obviously comes with an SPI firewall. The DMZ port can be configured as another WAN interface with traffic load sharing and balancing. The web-based GUI looks slick and professional. It's easy to navigate and is suitably intuitive. Real administrators, however, might prefer the power of the console, which is available, too.

DFL-260 is a robust firewall which works rather well. The optional subscription service for IPS, Anti-Virus scanning and Web Content Filtering is recommended if you decide to buy the device. Don't forget to consider the cost of a yearly subscription when you calculate TCO. DFL-260 is a feature-rich device and, although some might wish that it supported D-Link's ZoneDefense mechanism also, it's impossible to have everything. D-Link has done a good job on this one.



• CONTACT D-Link Australia
• ONLINE www.dlink.com.au/
• MARKET SMB
• PRICE \$1,180

✓ Good features and performance.

• VERDICT ★★★★★

✗ No IP blacklisting by IPS.



For SMB security purposes, the DFL-260 is recommended.



protecting your digital cargo

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Linksys RV042 10/100 4-Port VPN Router

A reliable and robust routing all-rounder.

The RV042 from Linksys is your basic router that will find a good home in many small offices and home offices all over the country. It features four full duplex 10/100 ports, one WAN port and one DMZ port. The DMZ port can be used as a secondary WAN port which is very handy. Backup and load balancing are available as an option when two WAN parts are in use. If a second WAN isn't needed, the DMZ port can be used to connect to a switch or a public server.

The router has reasonably sufficient VPN capabilities. It is interesting that the blurb on the box states that the router's VPN allows "up to 50 remote office or travelling users to securely connect into your office network from off-site". The included user guide, however, states that "up to 30 remote offices or travelling users" can connect. Surprisingly, for once, the user guide is wrong and the advertising spiel on the box is right. RV042 supports 50 VPN tunnels, not 30.

DES and 3DES are used for IPSec VPN tunnel encryption. We

would have liked to see AES as well but, given RV042's price, it's not too surprising that it's not there. RV042 uses an SPI firewall which adds an extra touch of security. The administrator can turn on or off firewall options such as SPI or Denial of Service protection, which prevents things like SYN flooding or IP spoofing. The admin can also elect to block WAN requests completely, enable remote management of the router and disable multicast pass-through.

Like most other firewalls, this one can filter Java, ActiveX and cookies or elect not to block these elements on trusted domains. Access to proxies can be disabled and domains can be blocked by URL or keywords. RV042's DHCP capabilities are typical of what you would expect.

A special mention must be made about RV042's web-based user interface. Although it's not as flashy as some others, it is intuitive and easy to use. The very first page, which is a system summary, presents the user with an image of the router. Clicking on the

router's port on the image opens a pop-up window with information such as link status, speed, priority and statistics covering the amount of packets received and transmitted.

Every page with configuration options has a sidebar with a brief explanation of the settings the user is looking at. The user can click on a help link to open another page with a more detailed step-by-step help section. These kinds of touches make the router simpler and more enjoyable to use.

For beginners, RV042 provides wizards with clear pictures and explanations. The basic setup wizard asks your typical questions about the WAN connection type and DNS services. The access rule wizard is actually quite spiffy, as it allows the user to easily configure the security policy of the router including scheduling.

RV042 has two types of

functionality when it comes to bandwidth management: rate control and priority, and they both work for inbound and outbound traffic. Rate control guarantees minimum and maximum bandwidth for services and/or IP addresses. Priority is used to prioritise bandwidth for services.

In terms of system management, the router can send an email to the administrator if it detects that something went wrong. Diagnostics are limited to ping and name lookup; however, the log system is quite good. The router can log configuration changes, error message, attempted logins and whether the system is bombarded with pings of death or win nukes or other unpleasantness.

This router from Linksys isn't particularly exceptional, but it's reliable and robust. If you are happy with its features it's something you ought to consider.

CONTACT Linksys
ONLINE www.linksys.com
MARKET SMB
PRICE \$309.95

✓ User interface; simple and robust.

VERDICT ★★★★★

✗ VPN features could be better.

The RV042 features an easy-to-use and intuitive interface: great for beginners.



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Why is it that, when I think outside of the box, customers still always find things to complain about...?



Controversial Virgin

Virgin has expanded its wireless broadband coverage, but some existing users are less than happy, reports *Dan Warne*.

Virgin Broadband uses Optus' HSDPA mobile network to provide broadband speeds of up to 700Kb/s. It is now available in Newcastle, Wollongong and Ballarat following expansion in the Optus network.

However, Virgin Broadband has become the subject of considerable user complaint in recent months. When it launched, APC lauded the offer as being exceptional value, as it provided 4GB of usage and unlimited calls to landlines nationwide and Virgin mobiles. However, since the introduction of the service, Virgin has halved the monthly download allowance to 2GB. It still remains good value compared to paying \$20-\$30 per month in Telstra line rental plus a \$30-\$40 ADSL broadband plan fee

(plus phone calls on top of that). However, Virgin has been struggling to get network and modem problems under control that have caused customers in marginal signal coverage areas to drop off the network. Customers have had to frequently power-cycle the Option Globesurfer 7.2 HSDPA modem to get reconnected. The problem manifests itself by a message reading 'Searching...' on the modem's screen.

Virgin Broadband says it is close to releasing a firmware update (version 'R2C08') for the modem which will fix the problems. It has provided it informally to a small group of users to test, but some users on Whirlpool say they are still having problems with it.

Customers are also complaining

of customer service call wait times of 90 minutes or more — which is particularly problematic given that calls made through the Virgin Broadband service automatically disconnect after 90 minutes.

The problems come at a bad time for Virgin Broadband, when competition in the mobile broadband space is ramping up considerably. Vodafone recently released a 5GB for \$39 offer via its HSDPA network, while 3 offers 2GB for \$29, with both deals offering much higher speeds of up to 3.6Mb/s. However, to be fair to Virgin, Vodafone and 3 only provide single-user laptop modems, unlike the Wi-Fi home modem provided by Virgin, and neither deal includes any calls.

in brief

NEW INTERNATIONAL CABLE ON THE WAY

A major new international data cable has been commissioned between the US territory of Guam and Australia. The under-sea fibre-optic cable will be constructed by PIPE Networks, which is not affiliated in any way with large, incumbent telcos such as Singtel Optus and Telstra, who currently control the two existing submarine data links going out of Australia. ISPs including Internode and iiNet have already said the new cable will allow them to offer greater monthly download allowance plans at no extra cost once the cable is up and running in 2009.



RENT MOVIES THROUGH ITUNES

Apple CEO Steve Jobs has announced downloadable rental movies through iTunes — a move that might just kill off the local video store if not for the fact that we have download limits in Australia. The rental service is only available in the US initially. iiNet provides free downloads from the iTunes Store for its customers, which may suggest that Apple will do deals with key ISPs for free downloads of rental titles. However, with by far the largest ISP (BigPond) operating its own download rental movie service for Windows users already, Apple has a long road ahead to crack the Australian market.

your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mb/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kb/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kb/s and 10GB data.

High-speed: cheapest 1.5Mb/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 23 January 2007.

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.com.au

www.oo.com.au



Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Super-fast broadband ISPs (faster than 1.5Mb/s)									
aaNet ADSL2+	www.aanet.com.au	\$19.90†* 1GB+ 24 Mb/s	\$39.90†* 8GB+ 24 Mb/s	\$49.90†* 16GB+ 24 Mb/s	\$79.90†* 32GB+ 24 Mb/s	✗	✗	\$119 12mths	✗
AAPT LiveNet ADSL2+	http://home.aapt.com.au	\$29.95† 1GB+ 24 Mb/s	\$39.95† 5GB+ 24 Mb/s	\$59.95† 20GB+ 24 Mb/s	N/A	✗	✓	\$100 1mth	✗
AuNix ADSL 2	www.aunix.com.au	N/A	\$44.95† 20GB+ 24 Mb/s	\$59.95† 30GB+ 24 Mb/s	\$59.95† 30GB+ 24 Mb/s	✓	✓	\$155 12mths	✓
BKB Home ADSL2+ Preferred	www.bkb.net.au	N/A	\$44.95† 10GB 24 Mb/s	\$59.95† 25GB 24 Mb/s	\$79.95† 40GB 24 Mb/s	✗	✓	\$89.95 12mths	✗
BKB Home ADSL2+ Standard	www.bkb.net.au	N/A	\$59.95† 5GB 24 Mb/s	\$69.95† 15GB 24 Mb/s	\$99.95† 40GB 24 Mb/s	✗	✓	\$89.95 12mths	✗
Blackstump ADSL2	www.blackstump.net.au	N/A	\$44.95† 20GB+ 2 Mb/s	\$59.95† 30GB+ 4 Mb/s	\$59.95† 30GB+ 4 Mb/s	✓	✓	\$129.95 12mths	✓
Comcen ADSL2+	www.comcen.com.au	\$19.95† 1GB+ 24 Mb/s	\$39.95† 5GB+ 24 Mb/s	\$69.95† 40GB 24 Mb/s	\$69.95† 40GB 24 Mb/s	✗	✓	\$50 12mths	✗
Comstech Systems ADSL2+	www.comstech.com.au	N/A	\$51.50† 5GB 24 Mb/s	\$66.95† 25GB 24 Mb/s	\$77.50† 50GB 24 Mb/s	✓	✓	\$133.95 6mths	✓
Dodo Super Fast ADSL2+	www.dodo.com.au	\$9.99†* 1GB+ 24 Mb/s	\$29.99†* 5GB+ 24 Mb/s	\$49.99†* 15GB+ 24 Mb/s	N/A	✗	\$1.90	\$129.99 1mth	✗
Dodo High Speed ADSL2+	www.dodo.com.au	\$29.99†* 1GB+ 24 Mb/s	\$39.99†* 5GB+ 24 Mb/s	\$59.99†* 15GB+ 24 Mb/s	N/A	✗	\$1.90	\$129.99 1mth	✗
Empcom ADSL2+	www.empcom.net	N/A	\$59.95 20GB 24 Mb/s	\$59.95 20GB 24 Mb/s	\$89.95 40GB 24 Mb/s	✗	✗	\$129 6mths	✗
EscapeNet ADSL2+	www.esc.net.au	\$19.90† 500MB 24 Mb/s	\$39.90† 5GB 24 Mb/s	\$59.90† 25GB 24 Mb/s	\$89.90† 50GB 24 Mb/s	✓	✓	\$0 12mths	✓
Green Tree Frog ADSL 2+ ULL	www.greentreefrog.net.au	\$29.95† 2GB 24 Mb/s	\$39.60† 5GB 24 Mb/s	\$66† 20GB 24 Mb/s	\$99† 40GB 24 Mb/s	✗	✓	\$0 12mths	✗
iNet broadband2+ ADSL (24Mbit)	www.iinet.net.au	\$29.95† 500MB+ 24 Mb/s	\$49.95† 7GB+ 24 Mb/s	\$69.95† 20GB+ 24 Mb/s	\$99.95† 40GB+ 24 Mb/s	✗	✓	\$79.95 6mths	✗
ISP ADSL2+	http://w3.isp.net.au	N/A	\$36.30†* 16GB 24 Mb/s	\$69.30†* 42GB 24 Mb/s	\$69.30†* 42GB 24 Mb/s	✗	✓	\$145.65 6mths	✗
Internode Extreme ADSL2+	www.internode.on.net	N/A	\$49.95 10GB 24 Mb/s	\$59.95 20GB 24 Mb/s	\$74.95 30GB 24 Mb/s	✗	✓	\$129 6mths	✗
PrimusNET up to 800Kbps	www.iprimus.com.au	\$29.95† 1GB 8 Mb/s	\$49.95† 5GB 8 Mb/s	\$69.95† 20GB 8 Mb/s	\$89.95† 40GB 8 Mb/s	✗	\$4	\$118 1mth	✗
PrimusNET ADSL2+	www.iprimus.com.au	\$29.95† 1GB+ 24 Mb/s	\$49.95† 7GB+ 24 Mb/s	\$69.95† 12GB+ 24 Mb/s	N/A	✗	\$4	\$0 12mths	✗
iSage ADSL 2	www.isage.net.au	N/A	\$44.95† 20GB+ 24 Mb/s	\$59.95† 30GB+ 24 Mb/s	\$59.95† 30GB+ 24 Mb/s	✓	✓	\$155 12mths	✓
Koala Residential ADSL2+	www.koalatelecom.com.au	N/A	\$44.95† 5GB+ 24 Mb/s	\$69.95† 20GB+ 24 Mb/s	\$89.95† 30GB+ 24 Mb/s	✓	✓	\$149.95 6mths	✗
Koala Usenet Dedicated	www.koalatelecom.com.au	N/A	\$49.95† 30GB 24 Mb/s	\$59.95† 50GB 24 Mb/s	\$49.95† 30GB 24 Mb/s	✓	✓	\$149.95 6mths	✓
Netspace Home ADSL2+	www.netspace.net.au	\$9.95†* 500MB 24 Mb/s	\$39.95† 5GB+ 24 Mb/s	\$69.95† 20GB+ 24 Mb/s	\$89.95† 30GB+ 24 Mb/s	✗	✓	\$99 6mths	✗
Netspace SOHO ADSL2+	www.netspace.net.au	N/A	\$49.95† 5GB 24 Mb/s	\$59.95† 10GB 24 Mb/s	\$99.95† 30GB 24 Mb/s	✗	✓	\$99 6mths	✗
OptusNet Cable	http://personal.optus.com.au	N/A	\$59.99† 15GB+ 20 Mb/s	\$59.99† 15GB+ 20 Mb/s	\$99.99† 30GB+ 20 Mb/s	✗	✓	\$188 12mths	✗
OptusNet DSL Direct	http://personal.optus.com.au	N/A	\$59.99† 15GB+ 24 Mb/s	\$59.99† 15GB+ 24 Mb/s	\$99.99† 30GB+ 24 Mb/s	✗	✓	\$188 12mths	✗
Rabbit Net ADSL2+	http://rabbit.com.au	\$29.95†* 5GB 24 Mb/s	\$29.95†* 5GB 24 Mb/s	\$49.95†* 15GB 24 Mb/s	\$79.95†* 30GB 24 Mb/s	✗	✓	\$42.50 12mths	✗
Soul ADSL2+	http://https:	\$34.95† 2GB+ 24 Mb/s	\$44.95† 5GB+ 24 Mb/s	\$69.95† 30GB+ 24 Mb/s	\$69.95† 30GB+ 24 Mb/s	✗	✓	\$119 12mths	✗
Spin ADSL2+	www.spin.net.au	\$19.95† 1GB+ 24 Mb/s	\$39.95† 5GB+ 24 Mb/s	\$69.95† 40GB 24 Mb/s	\$69.95† 40GB 24 Mb/s	✗	✓	\$50 12mths	✗
SuperNerd ADSL2+	www.supernerd.com.au	\$20† 1GB 24 Mb/s	\$30† 5GB 24 Mb/s	\$70† 45GB 24 Mb/s	\$60† 35GB 24 Mb/s	✓	✓	\$55 12mths	✓
TPG Residential ADSL2+	www.tpg.com.au	\$29.99* 600MB 24 Mb/s	\$49.99 18GB+ 24 Mb/s	\$69.99 40GB+ 24 Mb/s	\$59.99 30GB+ 24 Mb/s	✗	✓	\$59.95 12mths	✗
Vintek 2000k ADSL 2+	www.vintek.net	N/A	\$49.95 10GB 24 Mb/s	\$59.95 20GB 24 Mb/s	\$89.95 40GB 24 Mb/s	✗	✓	\$129 6mths	✗
Westnet Broadband2+	www.westnet.com.au	\$29.95†* 500MB 24 Mb/s	\$49.95† 5GB+ 24 Mb/s	\$69.95† 10GB+ 24 Mb/s	N/A	✗	\$0.83	\$139 12mths	✗
Wix ADSL2+	www.wix.com.au	N/A	\$39.95† 5GB 24 Mb/s	\$59.95† 20GB 24 Mb/s	\$99.95† 50GB 24 Mb/s	✗	✓	\$0 12mths	✓

Regular broadband ISPs (1.5Mb/s or less)

.Netcall ADSL (Bundled)	www.netcall.com.au	\$24.90†* 2GB+ 256Kb/s	\$44.90†* 16GB+ 1.5 Mb/s	\$54.90†* 24GB+ 1.5 Mb/s	\$84.90†* 32GB+ 8 Mb/s	✓	✓	\$145 12mths	✓
.Netcall ADSL (Unbundled)	www.netcall.com.au	\$29.90* 2GB+ 256Kb/s	\$49.90* 16GB+ 1.5 Mb/s	\$59.90* 24GB+ 1.5 Mb/s	\$89.90* 32GB+ 8 Mb/s	✓	✓	\$145 12mths	✓
aaNet ADSL (Bundled)	www.aanet.com.au	\$24.90†* 2GB+ 256Kb/s	\$44.90†* 16GB+ 1.5 Mb/s	\$54.90†* 24GB+ 1.5 Mb/s	\$84.90†* 32GB+ 8 Mb/s	✓	✗	\$145 12mths	✓
.Netcall ADSL (Bundled)	www.netcall.com.au	\$24.90†* 2GB+ 256Kb/s	\$44.90†* 16GB+ 1.5 Mb/s	\$54.90†* 24GB+ 1.5 Mb/s	\$84.90†* 32GB+ 8 Mb/s	✓	✓	\$145 12mths	✓
.Netcall ADSL (Unbundled)	www.netcall.com.au	\$29.90* 2GB+ 256Kb/s	\$49.90* 16GB+ 1.5 Mb/s	\$59.90* 24GB+ 1.5 Mb/s	\$89.90* 32GB+ 8 Mb/s	✓	✓	\$145 12mths	✓
aaNet ADSL (Bundled)	www.aanet.com.au	\$24.90†* 2GB+ 256Kb/s	\$44.90†* 16GB+ 1.5 Mb/s	\$54.90†* 24GB+ 1.5 Mb/s	\$84.90†* 32GB+ 8 Mb/s	✓	✗	\$145 12mths	✓

Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 1GB data limit)	High-speed plan (under \$100, at least 1.5 Mb/s, minimum 1GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Regular broadband ISPs (1.5 Mb/s or less)									
aaNet ADSL (Unbundled)	www.aanet.com.au	\$29.90* 2GB+ 256Kb/s	\$49.90* 16GB+ 1.5 Mb/s	\$59.90* 24GB+ 1.5 Mb/s	\$89.90* 32GB+ 8 Mb/s	✓	✗	\$145 12mths	✓
AAPT Broadband	http://home.aapt.com.au	\$34.95† 1GB+ 256Kb/s	\$59.95† 15GB+ 1.5 Mb/s	\$59.95† 15GB+ 1.5 Mb/s	N/A	✓	✓	\$100 1mth	✓
Ains Business SoHo DSL	www.ains.com.au	\$31.95* 1GB 256Kb/s	N/A	\$69.95* 15GB 1.5 Mb/s	\$82.95* 30GB 1.5 Mb/s	✓	✓	\$115 12mths	✓
AuNix ADSL	www.aunix.com.au	\$29.95† 15GB 256Kb/s	\$59.95† 20GB+ 1.5 Mb/s	\$59.95† 20GB+ 1.5 Mb/s	\$74.95† 35GB 1.5 Mb/s	✓	✓	\$99 6mths	✓
Australia On Line ADSL	www.australiaonline.net.au	\$29.95 1GB+ 256Kb/s	\$49.95 5GB 1.5 Mb/s	\$64.95 10GB 1.5 Mb/s	N/A	✓	✓	\$99 6mths	✓
Australis Internet ADSL	www.australis.net	\$34.95 1GB 256Kb/s	\$59.95 30GB+ 1.5 Mb/s	\$59.95 30GB+ 1.5 Mb/s	\$59.95 30GB+ 1.5 Mb/s	✓	✓	\$139 1mth	✓
Beagle Internet ADSL	www.beagle.com.au	\$29.95 1GB 256Kb/s	\$56.95 5GB 1.5 Mb/s	\$68.95 15GB 1.5 Mb/s	\$79.95 50GB 1.5 Mb/s	✓	✓	\$99.95 6mths	✓
Blackstump ADSL Bundles	www.blackstump.net.au	\$34.95†* 500MB 512Kb/s	\$47.95† 5GB 1.5 Mb/s	\$69.95† 15GB 1.5 Mb/s	\$79.95† 50GB 1.5 Mb/s	✓	✓	\$108 6mths	✓
BBI Flat Rate DSL	www.brownbear.net.au	\$32.95 2GB 256Kb/s	\$56.95 5GB 1.5 Mb/s	\$69.95 25GB 1.5 Mb/s	\$79.95 35GB 1.5 Mb/s	✓	✓	\$119 6mths	✓
BBI Excess DSL	www.brownbear.net.au	\$32.95* 2GB 256Kb/s	\$56.95* 5GB 1.5 Mb/s	\$69.95* 25GB 1.5 Mb/s	\$79.95* 35GB 1.5 Mb/s	✓	✓	\$119 6mths	✓
Brown Bear DSL/Phone	www.brownbear.net.au	\$19.95†* 1GB 256Kb/s	\$54.95† 5GB 1.5 Mb/s	\$64.95† 25GB 1.5 Mb/s	\$74.95† 35GB 1.5 Mb/s	✓	✓	\$119 6mths	✓
Chariot ADSL	www.chariot.net.au	\$29.95 1GB 256Kb/s	\$49.95 10GB 1.5 Mb/s	\$69.95 25GB 1.5 Mb/s	\$79.95 40GB 1.5 Mb/s	✓	✓	\$110 6mths	✓
Comcen Internet ADSL	www.comcen.com.au	\$29.95† 10GB 256Kb/s	\$44.95†* 5GB+ 1.5 Mb/s	\$69.95† 20GB+ 1.5 Mb/s	\$99.95† 30GB+ 1.5 Mb/s	✓	✓	\$99 6mths	✓
Concept Networks ADSL	www.conceptual.net.au	\$29.95* 500MB 256Kb/s	\$59.95* 5GB 1.5 Mb/s	\$69.95* 15GB 1.5 Mb/s	\$89.95 30GB 1.5 Mb/s	✓	✓	\$99 6mths	✓
Data Oz Residential ADSL	www.dataozsolutions.com.au	\$34.95 2.5GB+ 256Kb/s	\$49.95 5GB+ 1.5 Mb/s	\$64.95 15GB+ 1.5 Mb/s	\$84.95 30GB+ 1.5 Mb/s	✓	✓	\$159.95 6mths	✓
Dinkum Internet ADSL	www.dinkum.net.au	\$34.95 1GB 256Kb/s	\$59.95 5GB 1.5 Mb/s	\$69.95 15GB 1.5 Mb/s	\$89.95 50GB 1.5 Mb/s	✓	✓	\$129 6mths	✓
Dodo ADSL	www.dodo.com.au	\$19.99†* 500MB+^ 256Kb/s	\$39.99†* 5GB+^ 1.5 Mb/s	\$59.99†* 15GB+^ 1.5 Mb/s	N/A	✓	\$1.90	\$129.99 1mth	✓
EFTel ADSL	http://w3.efTel.com	\$19.95†* 500MB 256Kb/s	\$59.95†* 7GB 1.5 Mb/s	\$69.95†* 25GB+ 1.5 Mb/s	N/A	✓	✓	\$125 12mths	✓
EscapeNet ADSL Home	www.esc.net.au	\$29.90 500MB 256Kb/s	\$49.90 5GB 1.5 Mb/s	\$69.90 25GB 1.5 Mb/s	\$99.90 50GB 1.5 Mb/s	✓	✓	\$99 6mths	✓
eTelecom ADSL	www.etelecom.com.au	\$29.95†* 1GB 256Kb/s	\$59.95†* 5GB 1.5 Mb/s	\$69.95†* 15GB 1.5 Mb/s	N/A	✓	✓	\$99 12mths	✓
Green Tree Frog ADSL	www.greentreefrog.net.au	\$33† 5GB 256Kb/s	\$55† 10GB 1.5 Mb/s	\$55† 10GB 1.5 Mb/s	\$82.50† 40GB 1.5 Mb/s	✓	✓	\$132 6mths	✓
Hotkey Internet ADSL	www.hotkey.net.au	\$34.95* 1GB 1.5 Mb/s	\$44.95* 5GB 1.5 Mb/s	\$69.95 12GB 1.5 Mb/s	N/A	✓	✓		✓
ISP ADSL	http://w3.isp.net.au	\$33* 3GB 256Kb/s	N/A	\$69.30* 25GB 1.5 Mb/s	\$88* 30GB 8 Mb/s	✓	✓	\$132 6mths	✓
Internode Home ADSL	www.internode.on.net	N/A	\$49.95 5GB 1.5 Mb/s	\$69.95 20GB 1.5 Mb/s	\$84.95 30GB 1.5 Mb/s	✓	✓	\$129 6mths	✓
Primus Flexible Broadband	www.iprimus.com.au	\$24.95† 500MB 256Kb/s	\$54.95† 5GB 1.5 Mb/s	\$69.95† 20GB 1.5 Mb/s	N/A	✓	\$4	\$118 1mth	✓
ISage Internet ADSL	www.isage.net.au	\$34.95 15GB+ 256Kb/s	\$59.95† 20GB+ 1.5 Mb/s	\$59.95† 20GB+ 1.5 Mb/s	\$79.95 35GB+ 1.5 Mb/s	✓	✓	\$99 6mths	✓
ITEL ADSL	www.itel.net	\$29.95†* 500MB 256Kb/s	\$59.95†* 5GB 1.5 Mb/s	N/A	\$79.95† 60GB 1.5 Mb/s	✓	✓	\$129 12mths	✓
Koala Residential ADSL1	www.koalatelecom.com.au	\$34.95† 2.5GB+ 256Kb/s	\$49.95† 5GB+ 1.5 Mb/s	\$69.95† 15GB+ 1.5 Mb/s	\$89.95† 30GB+ 1.5 Mb/s	✓	✓	\$149.95 6mths	✓
Koala Business ADSL1	www.koalatelecom.com.au	\$34.95†* 2GB+ 512Kb/s	\$49.95†* 7GB+ 1.5 Mb/s	\$59.95†* 15GB+ 1.5 Mb/s	\$79.95†* 30GB+ 1.5 Mb/s	✓	✓	\$149.95 6mths	✓
Lizzy ADSL	www.lizzy.com.au	\$29.95 1GB+ 256Kb/s	\$49.95 5GB 1.5 Mb/s	\$64.95 10GB 1.5 Mb/s	N/A	✓	✓	\$99 6mths	✓
Netspace Home ADSL	www.netspace.net.au	\$29.95† 10GB+ 256Kb/s	\$39.95† 5GB+ 1.5 Mb/s	\$69.95† 20GB+ 1.5 Mb/s	\$99.95† 30GB+ 1.5 Mb/s	✓	✓	\$99 6mths	✓
NetSpeed ADSL	www.netspeed.com.au	\$29.95†* 1GB+ 256Kb/s	\$54.95†* 5GB+ 1.5 Mb/s	\$64†* 10GB+ 1.5 Mb/s	N/A	✓	\$2	\$139 12mths	✓
Rabbit Net ADSL	http://rabbit.com.au	\$28.95†* 500MB 256Kb/s	\$58†* 5GB 1.5 Mb/s	\$70†* 30GB 1.5 Mb/s	\$70†* 30GB 1.5 Mb/s	✓	✓	\$104.50 6mths	✓
Soul ADSL	http://https:	\$29.95 No limit 256Kb/s	\$59.95† 10GB+ 1.5 Mb/s	\$59.95† 10GB+ 1.5 Mb/s	N/A	✓	✓	\$119 12mths	✓
Spin Internet	www.spin.net.au	\$29.95† 10GB 256Kb/s	\$44.95†* 5GB+ 1.5 Mb/s	\$69.95† 20GB+ 1.5 Mb/s	\$99.95† 30GB+ 1.5 Mb/s	✓	✓	\$99 6mths	✓
SuperNerd SuperDSL	www.supernerd.com.au	\$26.95 1GB 256Kb/s	\$59.95 15GB 1.5 Mb/s	\$59.95 15GB 1.5 Mb/s	\$72.95 30GB 1.5 Mb/s	✓	✓	\$65 6mths	✓
TSN Broadband Without Fixed Term Contracts	www.tsinternet.com.au	\$32.95 1GB+ 256Kb/s	\$49.95 5GB+ 1.5 Mb/s	\$69.95 20GB+ 1.5 Mb/s	\$99.95 40GB+ 1.5 Mb/s	✓	\$1.95	\$99 1mth	✓
Vintek Personal ADSL	www.vintek.net	N/A	\$49.95 5GB 1.5 Mb/s	\$69.95 20GB 1.5 Mb/s	\$99.95 40GB 1.5 Mb/s	✓	✓	\$129 6mths	✓
Water Sprite ADSL1 Shaped plans	www.watersprite.net.au	\$35 2GB 256Kb/s	\$60 5GB 1.5 Mb/s	\$70 15GB 1.5 Mb/s	\$84 35GB 1.5 Mb/s	✓	✓	\$150 6mths	✓
Water Sprite ADSL1 Excess charged plans	www.watersprite.net.au	\$35* 2GB 256Kb/s	\$60* 5GB 1.5 Mb/s	\$70* 15GB 1.5 Mb/s	\$84* 35GB 1.5 Mb/s	✓	✓	\$150 6mths	✓
Westnet Broadband1	www.westnet.com.au	\$29.95† 500MB 256Kb/s	\$59.95† 10GB+ 1.5 Mb/s	\$69.95† 20GB+ 1.5 Mb/s	\$99.95† 40GB+ 1.5 Mb/s	✓	\$0.83	\$99 6mths	✓

Key: * ISP charges excess usage fees when you exceed your download limit; † This price only available if bundled with long distance telephony from the ISP; + Additional download allowance available with this plan for use in off-peak periods; ^ ISP combined sent and received data when calculating usage.

Build the perfect 24/7 PC

Save time, hassle and money by running your PC 24/7. *Mike Williams* reveals a wealth of applications you should be running day and night.

In this hectic world, it's easy to feel like there aren't enough hours in the day. And even our PCs are starting to feel the strain. Nowadays, they're critical parts of our homes, providing VoIP services, acting as internet gateways, streaming media, and more. So it's no surprise that increasing numbers of people are now leaving their PCs running 24/7. If you're one of them, are you getting the most from it? Is your PC running as safely, reliably and efficiently as it can? If not, here's how to save time and hassle, not to mention money.

SCHEDULED DOWNLOADS

One major advantage which comes from leaving your computer on overnight comes from making more-efficient use of your internet bandwidth, by scheduling downloads that might otherwise reduce peak-time browsing to a crawl. And there could be a financial advantage to this approach, too.

Some companies (if you read the small print) don't charge as much for off-peak usage. Even a 2Mbit/s connection could grab 7 or 8GB of data in that period. So if you can live with the 1GB peak-time usage, then you'll still be able to grab more than 200GB of data every month, and even some supposedly unlimited accounts costing considerably more may not let you do that.

Taking advantage of this time-shift approach is easy, too, once you have the right

software. Orbit Downloader (www.orbitdownloader.com) will intercept browser downloads, and can schedule them with ease. And uTorrent (www.utorrent.com) can be configured to download torrents overnight (click Options > Preferences > Scheduler and disable daytime use), leaving your peak-time bandwidth free. Don't forget about those Windows Updates, which can often be sizeable files. Make sure they're scheduled to be downloaded at an off-peak hour (see Control Panel > System > Automatic Updates in XP).

AUTOMATE MAINTENANCE

Now you have time-shifted your downloads, why stop there? A virus scan, for instance, can tie up your system for an hour or more: why not run it overnight instead?

Running your backups overnight also makes sense. Not only is it more convenient, but there's also much less chance of files being locked, as you're not around running applications. At the very least you should sign up for an online backup service, such as Diino (www.diino.com) or Carbonite (www.carbonite.com). Sending your most valuable documents to another site means they'll survive even if your house burns down or the PC is stolen, and as you can get a 2GB Diino account for free there's really no reason not to do this.

Open the Windows Task Scheduler (Control Panel > Scheduled Tasks) and you'll probably

find jobs created by other applications. Could they be best run overnight? Then just right-click and select Properties > Schedules to reassign it.

Of course you can also use the Task Scheduler to automate processes of your own, if they have a command-line interface. To defrag your hard drive on a schedule with Windows XP SP2, for instance, right-click in the window, select New > Scheduled Task, and call it Defrag C. Then double-click the task, enter '%windir%\system32\defrag.exe c: -f' in the Run box, click Schedule and choose an appropriate time. Click OK, enter your Windows account password and you're done.

MASTER REMOTE ACCESS

Having your PC available all the time can be particularly handy when you're away from home. Let's suppose you're at work, and suddenly realise you've forgotten to bring in an important file. Under normal circumstances all you can do is apologise and try again tomorrow. But if your PC is on, has its broadband connection open, and is running a remote access package, then it's a very different story. You'll be able to log in to your home PC from any other internet-enabled system, then view and operate your desktop just as though you were sitting in front of it, including viewing documents, transferring files, or uploading them somewhere for easy access from your current location.



Windows XP and Vista provide their own remote access package in Remote Desktop, however this is only included on XP Professional or one of the Business or Ultimate editions of Vista. It's also fussy about what's running on the PC you're using to connect to your home system. And its reliance on Terminal Services means hackers can more easily pick up that you've turned on remote access, although they still can't log in themselves without knowing your account user name and password.

Windows XP users will be better off using a Virtual Network Computing (VNC) system. These are generally secure, simple to install, and place no special requirements on the client. The open source UltraVNC (www.uvnc.com) is an excellent example, having more options than most of the free competition, and allowing connection to your host PC from any Java-enabled browser.

Move to Windows Vista, though, and it's a very different story. The problem here is that if you do anything on the remote PC that requires security approval, the usual UAC 'Windows needs your permission to continue' dialog pops up. And this appears only on the host PC — it doesn't make it to your remote VNC client — so you're locked out of the system until you get home.

You could disable UAC as a workaround, but reducing your security just because a program can't cope with it is a really bad idea. And anyway, we have a better option: sign up with



HAVING YOUR PC AVAILABLE ALL THE TIME CAN BE PARTICULARLY HANDY WHEN YOU'RE AWAY FROM HOME

LogMeIn instead. This is incredibly easy to set up — no tinkering around with firewalls to worry about — you just install the software on your host PC and you're done. Then, on the remote system, go to www.logmein.com, log in with your username and password, choose your host PC and it'll connect for you. No special software is required, and (according to our tests) performs equally well on Windows Vista and XP. Well worth a try.

PERSONAL FTP SERVER

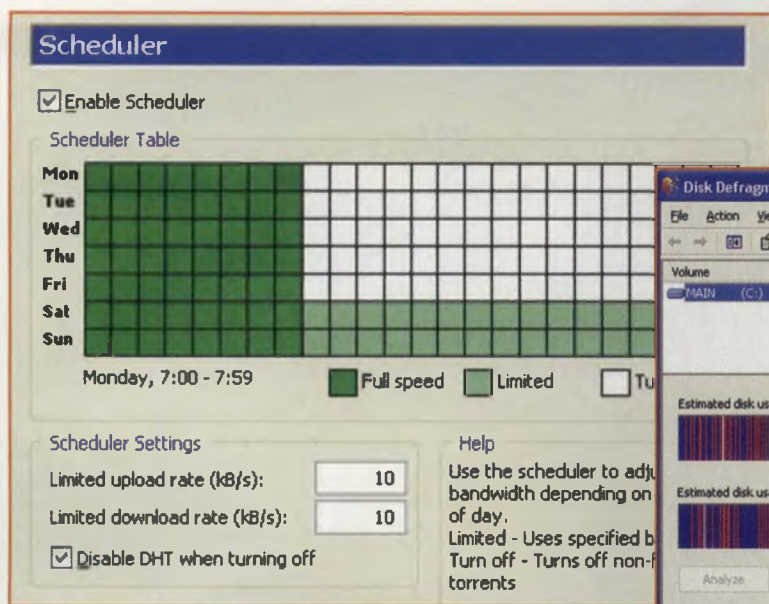
Remote access is an enormously powerful tool, but in many cases a simpler solution might be more appropriate. If you want friends and relatives to have access to the photos you took at a recent family wedding, say, a better idea would be to run an FTP server. They could then easily log on and download the largest of files, without you having to worry about email size restrictions, or spending an age uploading them all to Flickr. Alternatively, you could maintain a server for your own use, and so provide easy access to specific files without the security risks of a full remote access solution. It could make a lot of sense, especially when perfectly adequate

solutions are available that you can set up, for no cost, in around half an hour.

Perhaps the easiest way to start is by downloading a copy of the Filezilla server (<http://filezilla-project.org>). Install the program, accepting all the default settings, then launch it and click Edit > Users > Add. Enter a username, click OK, then check the Password box and enter something that's easy for you to remember but hard for anyone else to guess.

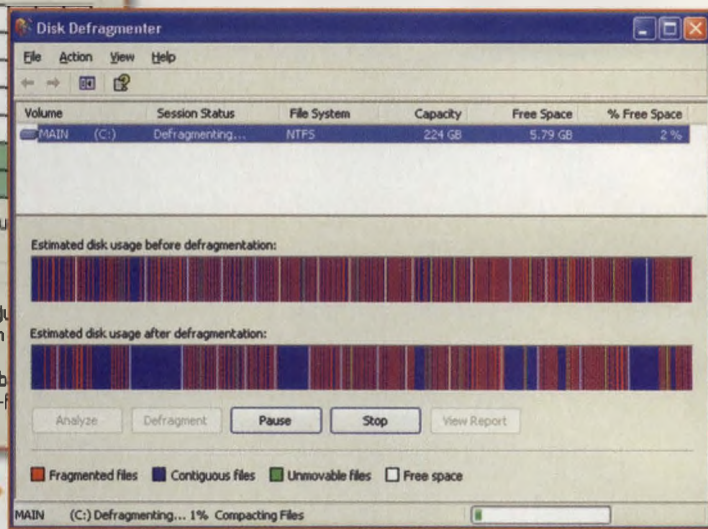
Next, choose the Shared folders page, click Add and navigate to the folder you'd like to become the root of your FTP server. To stay secure you should limit access as much as possible, which means don't share C:\, C:\Windows, your My Documents folder or any folder where an application has been installed. It's much better to create a special Filezilla folder in My Documents, point the program to it, then copy whatever files you need to make available into that folder.

You can now test the FTP server, by entering <ftp://127.0.0.1> into a browser. If that works and you can log on with your password and download files, then everything's looking good. If your PC is behind a firewall then you'll have to



The application uTorrent makes it simple to schedule downloads for particular times only. You can also limit its upload and download speeds.

Don't waste daytime hours waiting for your defrag program to finish; arrange for it to run overnight instead.



open ports 20 and 21 for active mode FTP to work. It may also be necessary to configure a range of ports for passive mode transfers, which can be done from the Settings dialog (Edit > Settings > Passive mode settings). And if you use a router then this may need configuring to forward port 21 traffic to your server machine (www.portforward.com).

There's nothing to stop you running a game or web server, too, but performance will be limited by your broadband upload speed, which could be as low as 288Kbit/s. If that's a problem, consider moving to an ISP whose premium ADSL 2+ account allows uploading at up to 2.5Mbit/s.

MONITOR CPU TEMPERATURE

We've identified plenty of reasons why you might like your PC to be running 24 hours a day,

but it is up to the task? Heat is a particular problem. If your CPU is already running too hot, then leaving it active all the time could make for an unreliable system, with a much shorter lifespan.

To get a feel for whether you may have a problem with increased temperatures, check your CPU specification at the AMD or Intel site to determine its maximum temperature (or more easily, browse the tables assembled at Hardware Secrets, www.hardwaresecrets.com/article/143/1).

Now compare this with your own CPU temperature using an appropriate monitoring tool. Your motherboard manufacturer may provide one, but if not you can always try a third-party utility such as Hardware Sensors Monitor (www.hmonitor.net) or Motherboard

Monitor (<http://majorgeeks.com/download.php?det=311>). If these don't work for you, then look for an option called PC Health (or similar) in your BIOS setup program, which should contain similar information.

Try checking the PC's temperature soon after you turn on your PC, then straight after running something CPU-intensive like a fast 3D game, and again at the end of the day. This will give you a feel for how it's performing over time, and if you're getting close to the CPU maximum.

Even if you're well under the limit, there's no harm in cutting temperatures further. So blow away the dust from inside the case and clean the grime off your fans and the grille on your case and power supply. Don't leave the case open, either; you should get better airflow with it closed.

PICKING THE PERFECT UPS

PROTECTING YOURSELF FROM POWER PROBLEMS CAN BE SIMPLE AND INEXPENSIVE.

The longer your PC is running, the more likely it is to encounter electrical spikes, surges or low voltage, which could cause a variety of errors, reboot your system, or fry it completely. Fortunately, investing in an Uninterruptible Power Supply (UPS) device can help, smoothing out surges and providing battery backup if the power fails altogether.

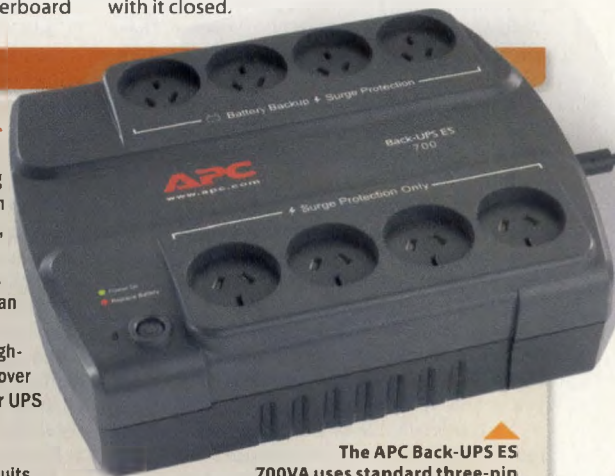
When UPS shopping you should start by looking at its connections. Three power outputs from the battery would be useful, RJ-11 connections to offer surge protection on ADSL and telephone lines, and an RJ-45 connector to protect an Ethernet modem. You'll also want a serial or preferably USB port, which allows the UPS to connect to your PC and

signal that there are power problems.

There should be software that comes along with this, so if you have Windows Vista then check carefully for compatibility: even now, some older UPSs don't have it.

Check the load a UPS can support, too. Some cheaper models use batteries that can only supply a maximum of 300W – potentially a problem if you're running a high-end system. And don't necessarily be won over by compact, lightweight systems. A smaller UPS normally means shorter battery life.

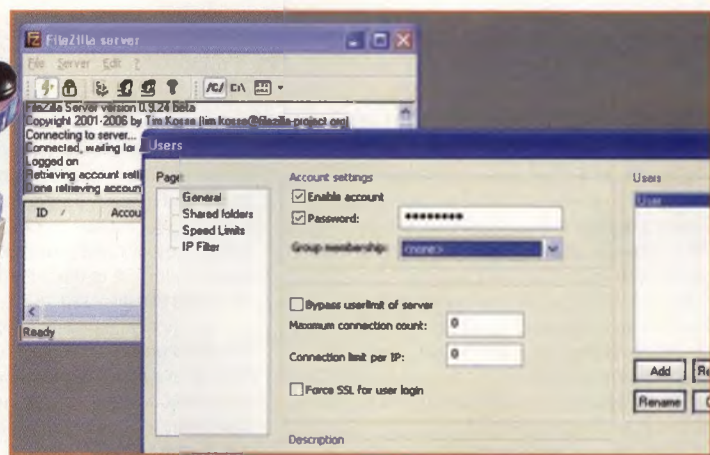
If you're on a budget, we'd recommend you shop around to get the UPS that best suits your needs.



The APC Back-UPS ES 700VA uses standard three-pin power sockets for easy setup.



Replacing your CPU fan can improve system cooling and reduce noise, and doesn't need to cost a lot.



FTP servers such as those offered by FileZilla are easy to set up and can run efficiently on even the most basic of PC systems.



IT'S IMPORTANT TO ENSURE THAT YOUR HARDWARE CAN COPE WITH RUNNING 24/7

Explore your BIOS set-up menu and you may find other useful options, including the ability to increase fan speed when the CPU temperature is above a certain figure. Tweaks here can prove effective if your processor is running hot but may also significantly increase system noise levels, so are probably best applied only in extreme situations.

AVOID MEMORY LEAKS

It's important to ensure your hardware can cope with running 24/7, but don't forget, there are software issues here, too. Some badly behaved programs regularly allocate memory and system resources as they run, for instance, but don't free them all again later. And the result is a memory leak, where free RAM falls constantly over time. If the leak is slow then you may not notice it during normal desktop use, but leave the PC for days and it's sure to become more significant, eventually grinding your system to a halt.

Could this happen to you? Try monitoring

your system to see how it's performing. The simplest way to do this in Windows XP is to close all your applications, launch Task Manager, switch to the Performance tab and note the Commit Charge (allocated memory including the paging file). Now minimise Task Manager and continue running your PC, returning to check the Commit Charge occasionally when you've no programs running. It's normal for the figure to increase sometimes, perhaps because a background program requires more resources, but if your Commit Charge shows consistent

growth, even if the PC is left running overnight, then you may have a problem.

Fixing memory leaks can be hard, though, and beyond removing the offending program altogether, may not be possible at all. So our advice is to forget the technicalities and get back to basics. The most important thing is to simplify your system, ruthlessly stripping out the Windows start-up programs you don't need, and uninstalling any applications that are surplus to requirements. The fewer you have running, the less likely you are to have problems.

You can also work around these problems by rebooting your system occasionally. If you're at home then do it yourself, on a daily basis (or weekly, or monthly, depending on how quickly your resources are being eaten up). But you can also automate the process, using Task Manager to force a reboot at the time of your choosing. Use the instructions we described earlier for automating a defrag, but with the command line "%windir%\system32\shutdown.exe -r -t 00 -f",

FACT FILE!

Attach an IP camera to your 24/7 PC and you've got a simple security system that can let you view your home from any internet-enabled system.

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TURN ON YOUR COMPUTER WHEN YOU NEED IT, FROM ALMOST ANYWHERE IN THE WORLD.

Leaving your PC on all the time may be convenient but of course also means you'll use much more electricity, which is expensive and not exactly environmentally friendly. But if you only need to use the system occasionally, then there may be a better solution. Switch on Wake-On-LAN (WOL) and you can turn your PC off then restart it when necessary from another system on your network or even over the web.

To make this work you first need a network adapter that supports WOL. This will probably have to be switched on in your BIOS setup menu (usually in the Power section), as well as in Windows; launch Device Manager, double-click the network adapter, click Power Management and check 'Allow this device to bring the computer out of standby'.

Your system should also have a router that's always connected to the internet, and a wired connection to the PC you want to wake up. Use port forwarding (see www.portforward.com) to open a

port in the firewall that doesn't interfere with anything else, say 8,303, and forward UDP traffic to port 7 on your network broadcast address (usually your private IP address with 255 at the end, which is formatted like this: 192.168.2.255).

Now go to your target PC, open a command window and enter `IPCONFIG /ALL`. Make a note of the Physical Address (also known as the MAC address) for your network adapter, and your public IP address (also available at <http://whatismyip.com>).

Turn off your PC, then, using another PC, visit a site such as Remote Wakeup (www.remotewakeup.com). Enter the IP and MAC addresses you noted earlier, along with the port number you opened, and click Send. If everything's gone according to plan, that will be enough to boot your PC.

You can access some systems remotely even when they're turned off — by using WOL.

If this doesn't work, you can try a software tool (www.depicus.com) from a system on the same network. Get that running first. Check your router firewall logs to confirm it's receiving the WOL packet, and get troubleshooting advice online from articles such as the 'How To' section at SmallNetBuilder (www.smallnetbuilder.com).

and your system should restart just fine. Don't leave programs open, though, as any unsaved data will be lost. And make sure any scheduled reboot won't interfere with other automated processes, such as a disk defrag, or you could be left with a corrupted hard drive.

REDUCE POWER CONSUMPTION

Running a 24/7 PC has advantages, then, but of course this comes at the cost of increased electricity use, higher fuel bills and a guilt-

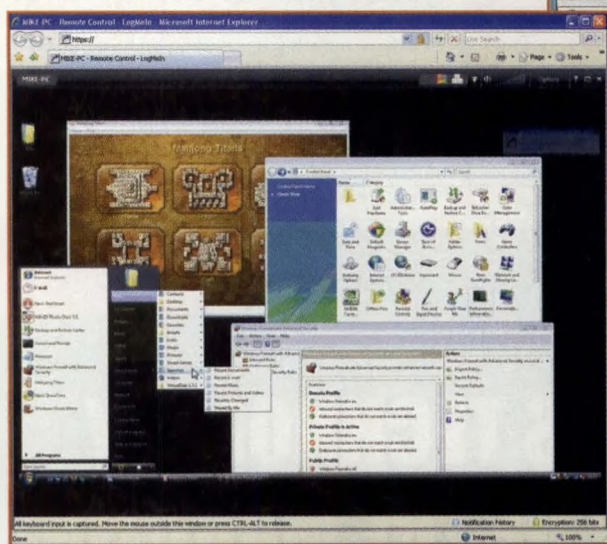
inducing increase in your carbon footprint. If you're making good use of your full-time PC then we don't think this should put you off the idea altogether, but it's important to address the power consumption problem.

You should start by only plugging in and turning on hardware you'll actually need. Some devices have an 'Off' button, but this only switches it into an idle state, and could still be using 10W or more. Anything connected by USB could also be using electricity, even

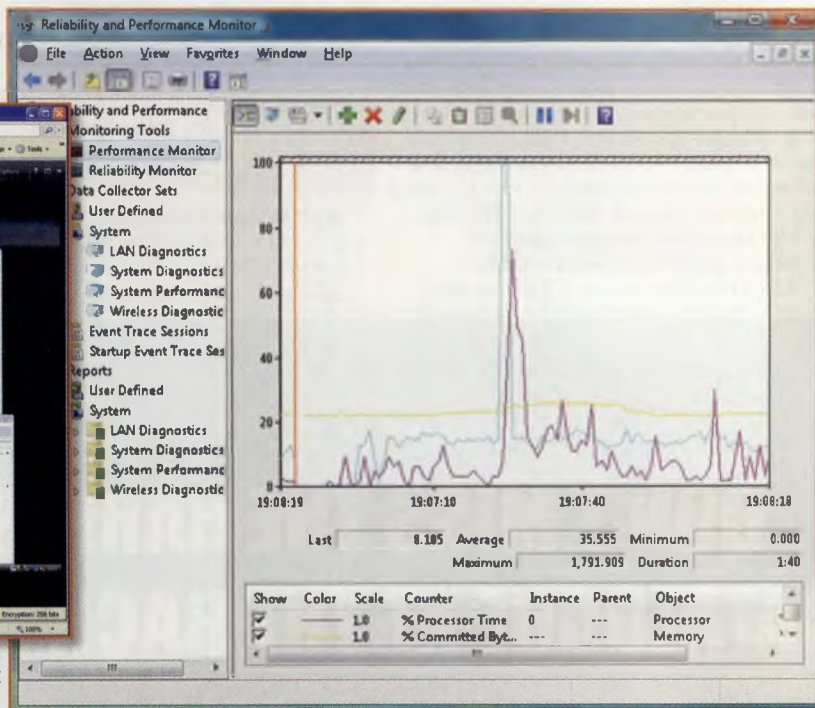
if it seems to be powered down.

You might also try turning down the brightness of your LCD monitor. We took a 19in model, turned the brightness from the maximum to minimum setting, and power consumption halved from 48 to 24W. A similar test on the 22in Chimei CMV 221H saw power use fall from 41.5 to a mere 14.2W. The image is still readable, too, once your eyes get used to the new look, but even dropping from 100 to 60 per cent could save a significant amount, though

The Windows Performance Monitor (launch `perfmon.exe`) offers a simple way for you to check for memory leaks on your PC.



LogMeIn gives you the ability to access your Windows Vista PC from across the internet, using only a web browser.



this does depend on the monitor used.

Vista users can also benefit from creating a new power plan. First click on Control Panel > Power Options > Create a power plan, use Power Saver as a base. Choose this power plan, then click Change Plan Settings > Change Advanced Power Settings, locate Processor Power Management in the list and check Maximum Processor State is set to something like 10 per cent. And while you're there, set Search and Indexing to High Performance.

Selecting this power plan last thing at night ensures your CPU will only run at very low speeds, but it will still cope just fine if you're only downloading files. And again, the savings are very worthwhile: our test system saved 20W on idle, 40W on light processor activity.

You could now have cut your power consumption by more than 50W: enough to make a real difference to your bill. But why stop there? Borrow a power meter and try some of these other ideas, particularly monitor brightness, with friends and at work. These power savings don't justify you leaving a system on just because you can't be bothered to wait a couple of minutes while it boots, of course. But if you're making good use of your 24/7 PC through the ideas we've suggested, and maybe others, then you should at least now be able to enjoy the benefits without feeling any green guilt or paying too much for the privilege. **ITC**



Bright pictures look great but could be costing you money. Turning down the brightness can cut power consumption by 50 per cent or more.

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This inexpensive unit has all the cables and software you need for complete protection.



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Making the most of Nvidia

Rather than waiting for the package maintainers, you can install the official Nvidia packages yourself, with the help of a few simple steps, and Ashton Mills.

For better or for worse, when it comes to accelerated drivers under Linux, Nvidia has a far better track record than ATI (now AMD). So much better, in fact, that some Linux users choose Nvidia because of this — for the most part, getting drivers working for Nvidia cards is simple and provides performance equal or better to the same under Windows.

If you're one to keep up with the latest driver releases you may find that your distribution doesn't feel the same way.

It can take weeks or months, sometimes much longer, for package maintainers to update the Nvidia packages — and in the meantime if they contain fixes or improvements you need, you may not want to wait.

INSTALLING THE OFFICIAL NVIDIA DRIVERS

Although the drivers are distributed as pre-compiled binaries, the necessary kernel interface to load them is provided as source — this way they can be configured to load on whatever kernel you use. Without this, you'd be limited to using only those kernels Nvidia supports, which, given the vast number of distributions and custom kernels, would be counter-intuitive for making it easy for Linux users to use Nvidia cards (which in turn, of course, means more sales — don't think it's necessarily an altruistic motivation!).

So to install the official drivers, you first need to install some basic development packages and the Linux headers the Nvidia kernel interface can be built against.

As usual we'll use Ubuntu as an example here, but you'll find the equivalent packages in the software repositories for whatever distribution you use. In Ubuntu start a terminal (Applications > Accessories > Terminal) and run the following:

Downloading the official drivers from Nvidia's site.



```
sudo apt-get install build-essential linux-headers-generic wget
```

Next, grab the latest drivers from Nvidia, which come as an installer, and make sure it's executable:

```
wget http://us.download.nvidia.com/XFree86/Linux-x86_64/169.07/NVIDIA-Linux-x86_64-169.07-pkg2.run
chmod a+x NVIDIA-Linux-x86_64-169.07-pkg2.run
```

You can of course download the drivers from your web browser, or copy the download link and paste it into the command line. In the example above this command fetches the latest 169.07 drivers for 64-bit Linux platforms.

Now it's time to install them. This is best done when X isn't running, so first logout of your Ubuntu session and then, at the login screen, press Ctrl-Alt-F1 to bring up a console. Log in as you usually would, and type the following:

```
killall gdm && killall xinit
sudo ./NVIDIA-Linux-x86_64-169.07-pkg2.run
```

As the Nvidia drivers will refuse to install if X is already running, it's necessary to kill GDM (Gnome Display Manager — the application that presents your login screen) and xinit to kill X. You can actually prevent the X check with a switch, but it's not recommended.

The drivers will prompt you — just click yes until the installer proceeds to build and install the kernel module.

Once this is done, it will ask if you want to install OpenGL libraries, and say yes here too. Finally, it will ask if you want your xorg.conf file automatically updated — if you're not already running a previous version of the drivers (if you installed them from the Restricted Drivers manager in Ubuntu, for example) you can say 'no' here.

If this is the first time you're installing Nvidia drivers on your system, say yes.



Nvidia's control panel and settings tool for Linux.

And you're done! Reboot, and your system will be using the latest drivers.

One final note: not all distributions necessarily like this — they may edit Nvidia's build to relocate files to directories where the package maintainers think they should go, but not all distributions do this and the drivers will work none-the-less. In fact, manually installing the Nvidia drivers is exactly how I set up the display properly working in the original Open Source Challenge when Ubuntu couldn't properly configure it.

COOLBITS

If you've ever tweaked or overclocked your Nvidia cards under Windows you're probably familiar with Coolbits, the special registry key that unlocks more features in the Nvidia driver panel under Windows. Even though Linux doesn't use a registry like Windows, Coolbits still works under Linux!

First make sure the 'nvidia-settings' package is installed. Some distributions will do this for you,

but many don't. Nvidia-settings is the official control panel from Nvidia, and it's frequently released in versions to match the latest drivers. Under Ubuntu, you can install it like so:

```
sudo apt-get install nvidia-settings
```

And then run it from Applications > System Tools > Nvidia X Server Settings. You'll recognise all the options from the same under Windows, including monitor configuration.

If you're going to use this toolbox to configure your monitor, make sure you backup your xorg.conf file first as Ubuntu has its own detection and configuration mechanisms.

However, one task the Nvidia panel is good for is setting up dual displays — and makes it very easy to do so. Just remember to run it as root (sudo), so Nvidia-settings has permission to update the xorg.conf file.

To enable cool bits do the following from a terminal:

```
sudo gedit /etc/X11/xorg.conf
```

Then scroll down until you get to a 'Device' section that contains 'Driver "nvidia"'. You may already see a few 'Option' tags — now add one more:

```
Option "Coolbits" "1"
```

Just make sure it's anywhere between the 'Section "Device"' and 'EndSection' tags. Even though the options that use boolean flags can accept 'True' or 'False', Coolbits won't enable unless you use '1'. Save the file, and logout — X will need to restart to read the updated xorg.conf file.

Now start Nvidia-settings again and you'll have a new 'Clock Frequencies' entry for your card, where you can overclock GPU core and memory just as under Windows.

What if you want to have the changes you make in Nvidia Settings automatically loaded at boot? No worries — it saves your settings to a file in your home directory, and you can run the tool

```
martigen@martigen-desktop:/$ nvidia-smi
-- General info --
Card:          NVIDIA GeForce 8800 GTS 512
Architecture:  G92 A2
PCI id:        0x600
GPU clock:     702.000 MHz
BusType:       PCI Express

-- Shader info --
Clock:         1620.000 MHz
Stream units:  128 (1b)
ROP units:     16 (1b)

-- Memory info --
Amount:        512 MB
Type:          128 bit DDR3
Clock:         999.000 MHz

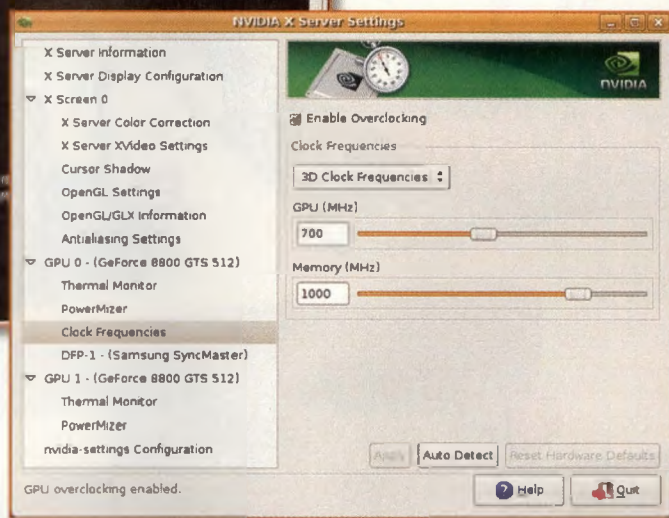
-- PCI-Express info --
Current Rate:  8X
Maximum rate:  16X

-- Sensor info --
Sensor:        Analog Devices ADT7473
Board temperature: 44C
GPU temperature: 44C
Fan speed:     846 RPM
Fan speed mode: auto
Fan duty cycle: 54.1%

-- VideoBIOS information --
Version:       62.92.16.00.26
Signature:     GeForce 8800 GTS 512 VGA BIOS
Performance level 0: gpu 700MHz/shader 16.2
VID mask:      3
Voltage level 0: 1.00V, VID: 0
Voltage level 1: 1.05V, VID: 1
Voltage level 2: 1.10V, VID: 2
Voltage level 3: 1.15V, VID: 3
```

Using nvclock to directly configure Nvidia cards.

Overclocking with Coolbits under Linux.



from the command line telling it to simply load your settings and then exit. Click System > Preferences > Sessions and add a new entry with a Name of 'Nvidia Settings' and a Command of 'nvidia-settings -l'.

NVCLOCK

But wait, there's more! A handy open source application called 'nvclock' can allow you to easily view information, set clock frequencies and — most important of all, since Nvidia Settings doesn't do this — adjust fan settings for your Nvidia cards. You'll find nvclock in Ubuntu's software repositories (make sure you've enabled all software sources, then System > Administration > Synaptic and search).

Note that the current nvclock supports all but the most recent 8800 range of cards; however, if you want this support now you can fetch the CVS version of nvclock and compile it yourself. First install CVS and change to the temp directory:

```
sudo apt-get install cvs
cd /tmp
```

Now grab the latest nvclock source code with CVS:

```
sudo cvs -z3 -d:pservers:
anonymous@nvclock.cvs.
sourceforge.net:/cvsroot/nvclock
co -P nvclock
```

And finally, compile and install it:

```
cd nvclock
```

```
sudo ./configure
sudo make
sudo make install
```

You can then manage your cards with 'nvclock' — run the command on its own to see the switches you can use. **ATC**

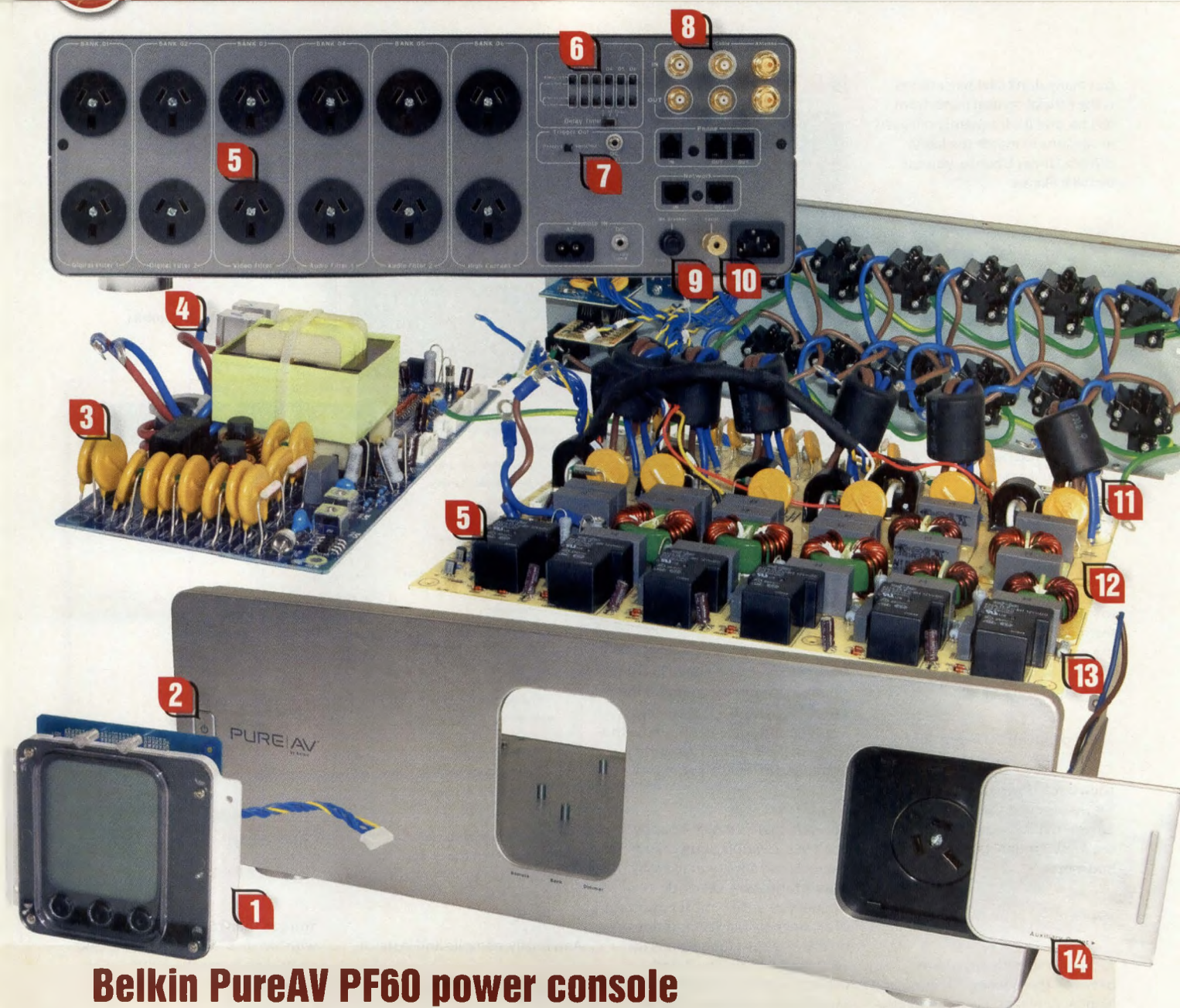
OTHER OPTIONS?

The 'Device' section in the /etc/X11/xorg.conf file that defines the Nvidia driver allows you to tailor the operation of the driver through many optional settings. There are quite a few — read the Nvidia readme for the full list — but here are some handy ones to add:

```
Option "NoLogo" "True"
Option "AllowGLXWithComposite" "True"
Option "AddARGBGLXVisuals" "True"
Option "UseEvents" "True"
Option "RenderAccel" "True"
Option "DamageEvents" "True"
```

Option "BackingStore" "True"

The 'events' and 'composite' switches especially will improve performance in Compiz, which is enabled by default in Ubuntu 7.10 and gives you those snazzy desktop effects. There are many more switches — if you enable 'vsync' for example from the Nvidia Settings program, you might want to also enable triple buffering. The option isn't there in Nvidia Settings, but you can add it to your xorg.conf file as 'Option "TripleBuffering" "True"'. **ATC**

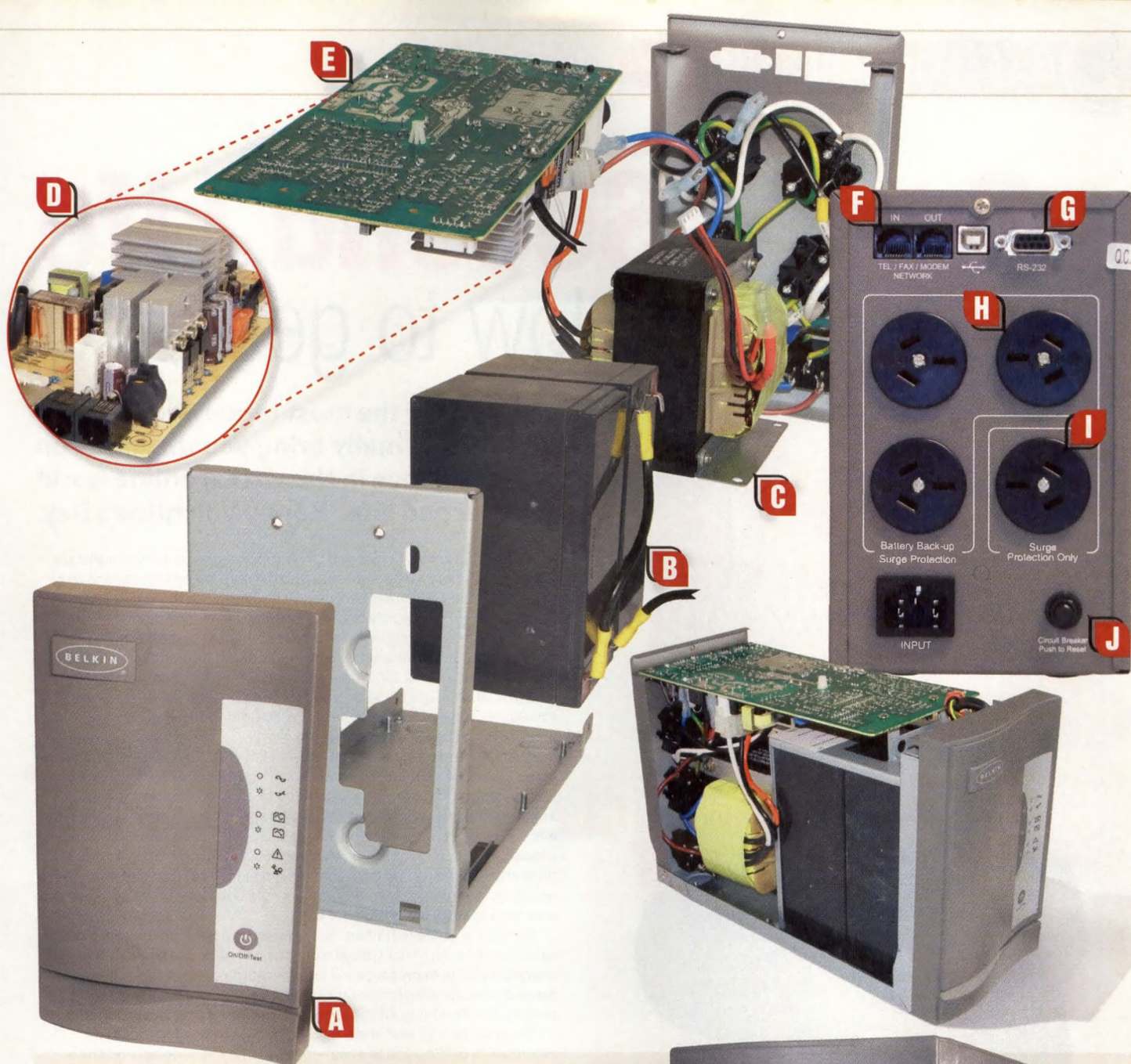


Belkin PureAV PF60 power console

Provides protection from power disturbances, and multi-stage filtration to enhance performance of home theatre hardware.

- 1 LCD Display & Control panel shows incoming voltage and output current.
- 2 Power switch controls all outlets programmed by the user to switch ON/OFF.
- 3 Three-stage surge protection circuitry.
- 4 Micro-processor control and monitoring centre controls switching, delays and voltage/current monitoring.
- 5 12-outlets in 6 separate filters (2 x Audio, 1 x Video, 2 x Digital and 1 x High-current).
- 6 Delay switches program the timed delay for each filter.
- 7 Input and Output power triggers control home theatre power sequencing.
- 8 Surge-protected coax, F-type, phone and Ethernet connectors.
- 9 8A Circuit breaker.
- 10 Earth lug.
- 11 Surge protection circuitry completely isolates connected devices from each other and prevents damage from power disturbances created by other connected devices.
- 12 RF filters isolate connected devices from each other and prevent damage from line noise and power disturbances created by other connected devices.
- 13 Individual filtration circuitry designed to optimise performance of Audio, Video, Digital and High current equipment.
- 14 Convenience outlet with sliding cover.





Belkin 1200VA Line Interactive UPS

Protects against power disturbances with three surge-protected outlets with battery backup.

- A** Control and display panel provides battery and power alerts.
- B** 12-Volt, 7.5Amp sealed lead acid batteries.
- C** Voltage-regulating transformer ensures consistent voltage output.
- D** Micro-processor monitors and controls incoming voltage.
- E** Surge-protection and filtration circuitry.
- F** Surge-protected phone connections.
- G** USB and serial ports for connection to PC. Used with supplied software to control UPS settings, system shutdown and to program alerts.
- H** 3 surge-protected outlets provide AC and battery power.
- I** 1 additional surge-protected outlet (no battery).
- J** Circuit breaker.





Sex in Second Life

How to get lucky



It's one of the most requested tutorials ever, so we finally bring you the guide on how to find love in the virtual online world of Second Life. Happy Valentine's Day.

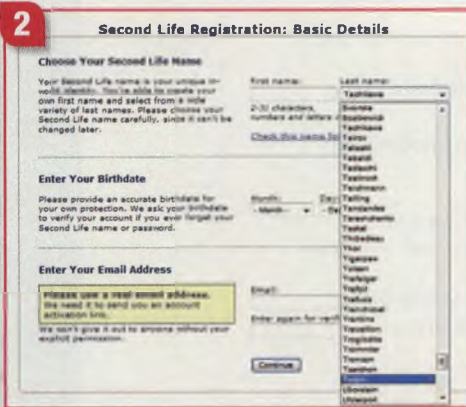
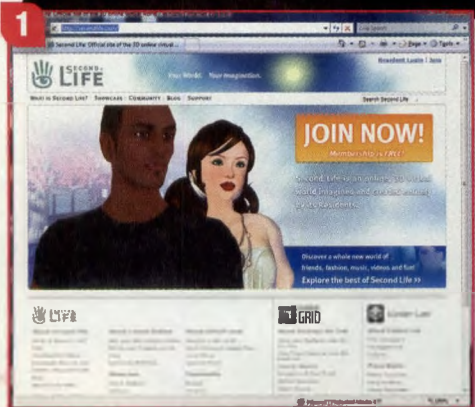
The main activity in Second Life is supposed to be romance and sex, but it's hard for beginners to find it. There are no wizards and few help guides, and new members usually find romance through frustrating trial and error. That's partly because Second Life, owned by Linden Labs, tries to replicate the real world and doesn't want to make it easy.

Second Life is an alternative world. It even has its own currency, the Linden dollar (around 250 Lindens for each US dollar), and you can buy land in it. Most major bricks and mortar companies, even US presidential candidates, have offices in Second Life. So does the Australian Broadcasting Corporation and Telstra.

Trying to find romance when you join Second Life is just like landing in the airport of a strange city and expecting to hook up with someone immediately. It just doesn't happen. You need to do the groundwork, just as you would in a real city. But because of special 'equipment' is required, and software or connection hitches can occur, it's been said that it's probably easier to get a 'r---' in the real world than in Second Life. But the difference, to the real world, is that everyone in Second Life is beautiful and sexy, regardless of whether the sexy girl is really a girl, or a 50-year-old man with a family and a beer belly.

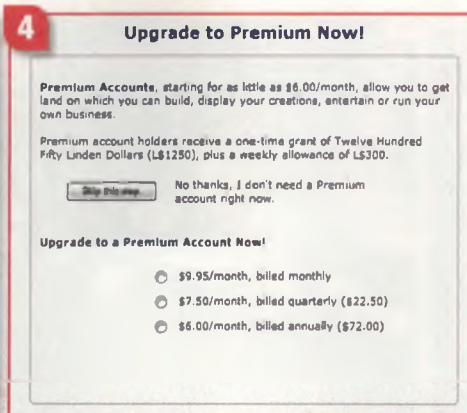
So this is a guide to finding that special hot partner for romance or a casual relationship. That special someone will be an avatar — an animated character that in many cases will look extraordinarily realistic. The thrill for Second Lifers looking for romance is that behind every avatar lies a real person. It's like having IM conversations but with computer animations.

Second Life is so vast and complex that we've distilled the bare essentials in getting you to experience romance. Joining Second Life is free, but you'll inevitably need to produce a credit card to be able to buy some of the more interesting goods and services. Most of all make sure you have a broadband connection, and your computer will need to be able to handle a graphically intensive environment.



1 Head to secondlife.com and click Join Now. The registration process that follows is straightforward.

2 You'll probably get a weird name, because all normal first names have gone. You'll note Second Life likes rugby players in its Surnames drop-down.



3 When selecting your avatar, pick a simple one – like the Boy or Girl Next door. They are easier to modify later on. Unmodified they telegraph that you're a noob (newcomer to Second Life).

4 At this point you don't have to upgrade to Premium. You can enjoy Second Life by living on freebies, but you may want to upgrade if you want to buy land and enjoy other privileges.

5 Download the client, install it, and then sign in. It will take you to Second Life's Orientation Island, where you learn how to change your appearance, communicate, and more.

6 When you land on Orientation Island, you are surrounded by other newly arrived noobs. So don't feel awkward at your lack of savvy in this virtual world.



7 Before you leave Orientation Island it's best to refine your appearance. Right-click on your avatar and select Appearance. You can change your clothes or shape.

8 OK, you're now ready to leave Orientation Island. Before you leave, you will be taken to Help Island and then teleported to the big, complex world of Second Life.

9 When you land in Second Life proper, volunteers answer your questions. But since your mission is romance, you need to head for the shops first.

10 Why? If you remove your pants, you'll realise that a critical piece of equipment is missing. You need it for any encounters. Girls are already equipped.



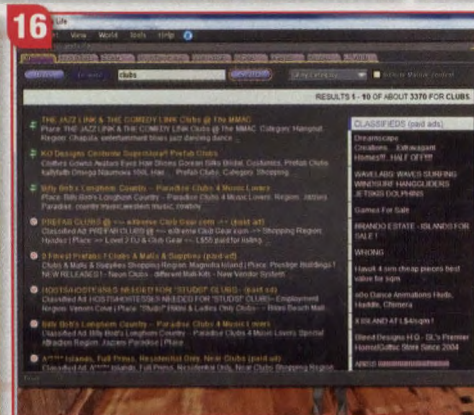


11 You can buy anything on Second Life, including fancier bodies. But we'll stick to the necessities. Go to the top-right corner and search for, uh... penis. Euphemisms don't work in search.

12 At penis stores, you can find free or premium attachments, although, if you want the latter, you'll need to pay in Linden dollars, which requires your credit card.

13 To buy any item on Second Life, click on it, select Buy, and a stream of dots capture the object and produce a dialog box in which you accept the purchase.

14 The item you've bought is now automatically added to your inventory box. To activate the item, drag it on to your body. In this case, don't forget to remove your pants.



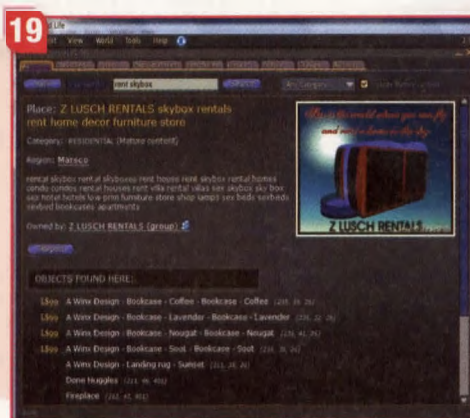
15 To detach an object, go to Edit > Detach and select the part. Put your pants back on by dragging them from your inventory box.

16 Next, you need to meet people. And here, it's just like real life. Unless you have a friend that's also signed on, do a search for meeting places such as dance clubs.

17 Clubs and bars are the easiest way to meet people. "Hi, I love your outfit," is always a good ice-breaker. But remember that if you hit it off, you'll need a place to go back to. You don't have one yet.

18 Alternatively, there are red light districts where people work as 'escorts'. Right-click on one, agree to a fee (between 200 and 1,500 Linden dollars), and a room is also provided.



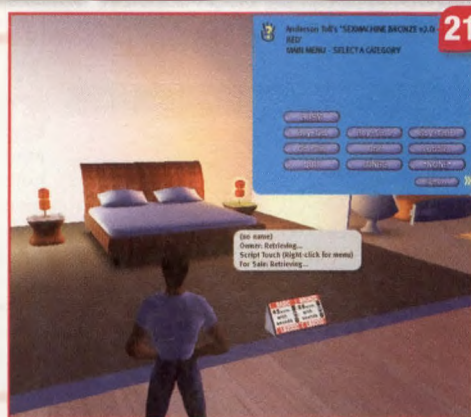


19 Unless your partner already has a place, one of the simplest ways of getting one is to rent a small room called a skybox, but you need to buy up some Linden dollars with your credit card.

20 You can also buy your own block of land and a house, just like in real life. But you need to be a premium member to buy real estate. Most places range from 5,000 to 20,000 Linden dollars.

21 Next, you need furniture. You'll find that furniture in Second Life is special; it comes with pre-packaged romance animations. Sit on the furniture, and the animations take over.

22 Animations in Second Life are activated when you click on so-called pose balls. They come with furniture or can be bought individually. Now it's up to you and your partner's imagination.



We're a family magazine, so we can't go into some of the X-rated aspects of Second Life. But if you still want more detail, go to <http://apcmag.com/secondlifesex> for an in-depth version of the scenes in this tutorial plus detailed explanations of how to change appearance, how to get Linden dollars and how to buy your own place.



GENUINE EPSON INKS AND PAPER

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HARDWARE

FIXING AN LCD MONITOR'S DEAD PIXELS

Q I have a stuck pixel right near the middle of my LCD monitor, which is now out of warranty. I know that with regular monitors you can use degaussing to fix them when they're out of alignment. Is there anything similar you can do with LCD displays?

Mary Yamars

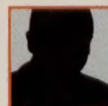
A The brutally honest answer to your question is "not really" — but with an aside of "just maybe". Officially speaking, there's nothing you can do about stuck pixels on a monitor. But unofficially speaking, switching the pixel on and off tens of thousands of times can actually succeed in unsticking some of them. We'd recommend visiting the web site at www.jscreenfix.com, which may be able to help you correct the problem. It creates a rapidly flashing graphic, which you should place under the faulty pixel and leave for five to 20 minutes. Note that it requires Firefox to run, which may take a few minutes to install — but it just might work.



Fixing an LCD monitor's dead pixels: JScreenFix at work on your pixels.

WHAT'S WITH THE READER BOX?

APC will give readers whose answer is highlighted a small promotion box in which they can promote themselves, their business or hobby — a URL or phone number can be included.



YOUR NAME HERE

A brief detail about how awesome you are that you could help.
www.yourwebsite.com

TIP...

TESTING GRAPHICS CARD PERFORMANCE

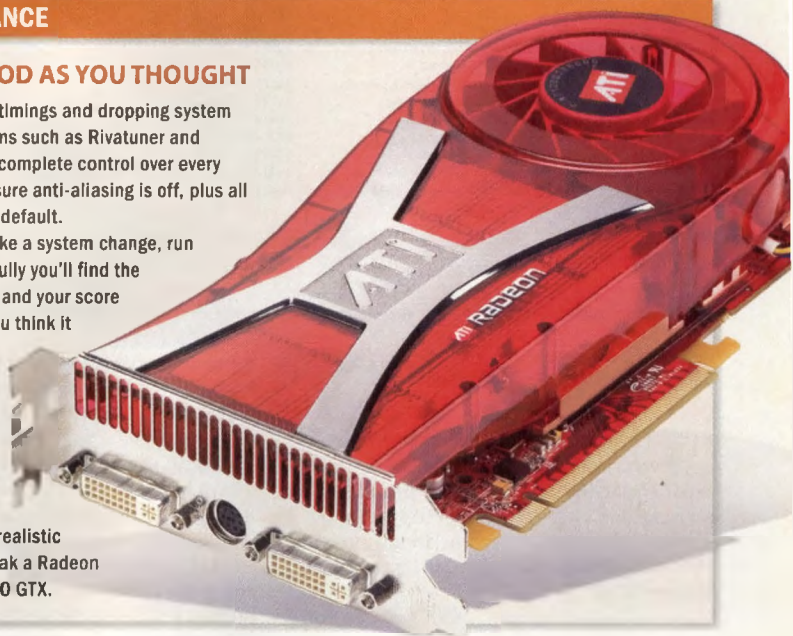
WHAT TO DO IF A VIDEO CARD UPGRADE ISN'T AS GOOD AS YOU THOUGHT

Upgrading your graphics card is a great idea if you wish to turn the detail in games up a notch higher while maintaining an acceptable frame rate. The downside of this is that you may find you don't get the performance you want. To help with this, start by downloading 3DMark 2006, run the basic test and compare the score with systems reviewed in old issues of APC or on the web. If your score is significantly lower than similar machines, something isn't right.

The first port of call is to try new drivers. You can obtain betas for both Nvidia and ATI drivers, as well as all the testing programs, from www.guru3d.com, although do bear in mind that some versions may have problems that lower your frame rates or cause graphical glitches. Don't forget to update your chipset drivers as well. Another good idea is to reset your BIOS to the default settings. Some innocent-looking option you played with six months ago may

be affecting memory timings and dropping system performance. Programs such as Rivatuner and ATITools will give you complete control over every visual setting. Make sure anti-aliasing is off, plus all settings should be at default.

Each time you make a system change, run 3DMark again. Hopefully you'll find the cause of the problem and your score will approach what you think it should be. If all else fails, try a fresh install of Windows. This is a must when you change motherboard, but can be a fix for 3D performance too. Be realistic though: you can't tweak a Radeon X800 Pro into an 8800 GTX.



HARDWARE

GRAPHICS CARDS FOR DVI OUTPUT

Q I was reading your November 07 Lab Challenge on graphics cards. I noticed that the MSI Radeon 2400 Pro got your 'Highly Recommended' award. I have a fairly late model ASUS board with in-built Intel GMA X3000 graphics. Is it worth it for me to upgrade to the MSI graphics board? I have not found any articles that compare the performance of the two options — I don't play really demanding games, but I am interested in the DVI connector and low profile.

Jorge Garcia

A The Radeon 2400 series of cards fill a niche that isn't gaming. It's aimed at providing dual-DVI output and support for larger monitors. If you're an occasional gamer that's managing with the X3000, then the 2400 Pro won't be any slower.

Nick Race

HARDWARE

GRAPHICS CARDS SUPPORTING AGP

Q I was just wondering which graphics card can be bought on the market now that support an AGP connection. I have recently bought a Dell 22in widescreen monitor and when I connect the supplied DVI cable to my current graphics card, I get a scrolling effect on my desktop as the resolution (although correct

for the native res of the monitor) seems to be larger than the monitor. I just want to purchase a new card that supports a DVI connection with support for 1,680 x 1,050px and is connected to the motherboard by VGA, not PCI-E.

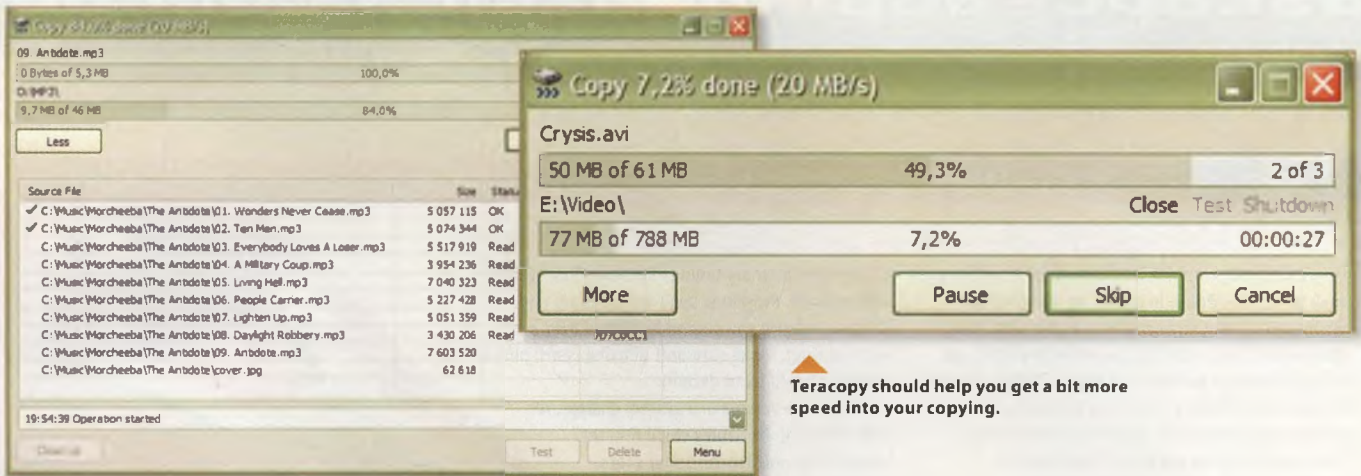
Ben Sligar

A AGP is dying out quicker than we expected, but there are still options. In the Nvidia camp, Inno3D and BFGTech sell up to a 7800GS in AGP, while for AMD Sapphire's HD Radeon 2600 Pro is the newest. None of those are going to run Crysis at anywhere near full glory, but it will make short work of Google Earth. Also, check your monitor and PC's resolution again, as screens tend to scroll like that when your PC's res is set too high.

Nick Race

AMD's Sapphire Radeon 2600 Pro — what's it good for?





WINDOWS VISTA

VISTA FILE COPYING

Q I have recently moved over to Windows Vista from Windows XP. While I'm not experiencing the performance nightmares some are reporting, I have found that copying large numbers of small files is excruciatingly slow. It's noticeably slower than in XP. Can I do anything to speed it up?

Karen Potter

A Yes, with the aid of a freeware tool called Teracopy (www.codesector.com/teracopy.asp). When you install this program, it integrates with the Windows shell, so whenever you copy files its GUI will pop up instead of the standard file copying window. Teracopy allows you to adjust the buffer size being used for files, and if you set it to be a large size it will definitely speed up transfers of multiple small files. You can monitor the speed of the transfer from within the window. It also gives you CRC information to verify the copying and allows you to pause a large transfer. These benefits make it useful for both XP and Vista users. It probably won't speed up a transfer from flash-based devices, though.

WINDOWS VISTA

DOWNLOADING FILES USING FTP IN WINDOWS VISTA

Q My workplace wants me to download large images from their company FTP site. However, I don't really know how to go about doing this using Windows Vista. Please can you advise me?

Juanita Painter

A The ability to move files from one area of the computer to another, and ultimately from one computer to another, has been around as long as the internet itself. The internet device for this is called FTP (File Transfer Protocol) and

the command line tool used by every network-enabled version of Windows to send and receive files is also called FTP (it's not a Windows program by the way — the original FTP specification was suggested in 1971).

While other FTP programs are available (as they say), we're going to deal with just the Windows Vista command line here.

Start a command shell in Vista (Start > cmd) and at the C:\ prompt type 'FTP'. The command prompt will disappear and be replaced with the FTP prompt ftp>. This indicates that you are inside the FTP program.

Now the FTP program is running you must connect to an external FTP server. At the prompt type 'open' followed by the name of the server, for example: 'open ftp.demon.com'.

Some FTP servers accept anonymous connections. An anonymous connection can be authenticated by the username 'anonymous', with the password being any email address. Otherwise, enter your username and password. Once authenticated you may download your files.

FTP has a useful help function. Simply type '?' at the prompt to see a list of allowed commands. To download a file, type 'get' followed by the name of the file. The file will be downloaded to the folder seen in the command prompt (in Vista this is your personal folder). To leave the FTP process, type 'bye' at the prompt.

WINDOWS

DISK USAGE AT A GLANCE

Q My hard disk drive keeps running out of space, even though I've deleted as much as I can. I think the problem is that I'm not sure exactly what's taking up all the space. Is there a way to see at a glance?

James Lepine

A It's a shame that Windows doesn't come with the feature you describe. It's such a common problem that there are quite a few programs that have been written to fill the void.

Our favourite is WinDirStat at <http://windirstat.info>, which gives you a very graphical summary, as well as the textual one you'd expect. Download the program and leave it to run for a few minutes. You'll then be able to browse through your entire disk(s) in a logical manner, and remove items you don't need.

WINDOWS

TWO MAILS IN OUTLOOK EXPRESS

Q I am currently using Outlook Express 6 running under Windows XP Professional to get my Hotmail emails. Invariably, I get two copies of every email in my inbox. Help, it's driving me mad!

Les Hill

A¹ The most likely cause is that you have Outlook set up to send and receive emails on startup and also to open your inbox by default. Both these operations can download new messages, and if they do it simultaneously it can result in two copies of an email in your inbox. Assuming this is your only email account, you can stop this by going to Tools > Option, and making sure that 'send and receive messages at startup' is unchecked. There are many other possible reasons, ranging from the above to corrupt Outlook files (far too many possibilities to list here).

BY JOSH RIESENWEBER

Josh was brought up with computers and recently started his own IT business Tech-Eze (Tech-eze.com.au), doing computer repairs and networking.

A² An alternate way of receiving Hotmail is to use Mozilla Thunderbird (www.mozilla.com/thunderbird/) with the Web-mail extension (<http://webmail.mozdev.org/>). All you need to do is download Web-Mail and the Hotmail extension then go into Thunderbird, click on Tools then Extensions and click Install, find the two .xpi's and open them. Then add the accounts by going into the Accounts Wizard and

follow the steps but, instead of using hotmail.com (for example) as your server, you just use localhost. To send, just use a personal one or your ISP's SMTP server. For more installation instructions just go to <http://webmail.mozdev.org/setup.html>.

BY FERGUS SYMON

Fergus is a student at Canberra Grammar School. He got into computers when he was 9 years of age. He enjoys gaming and working with servers.

A³ I'm rather shocked that you can still access your Hotmail through Outlook Express. There is a general consensus that Windows Live Mail has now taken over from Outlook Express. You could upgrade to Windows Live Mail, which has all the functions of Outlook Express and more. It integrates with Windows Live Messenger and anything else that has the 'Live' name in it.



BY JOSH THOMPSON

Josh is a 16-year-old student in South Australia. He has compiled his own internet browser, Linux kernel and upgraded his PC by hagglng for lower prices. He intends to study IT at uni and become an IT tech.

INTERNET EXPLORER

PRINTING FROM THE WEB

Q Recently whenever I try to print from within IE I get the following error. Cannot find 'file:///C:/Users/Graham/AppData/Local/Temp/Low/MUPWE10Q.htm'. Make sure the path or Internet address is correct.

A This may be caused by a corrupted IE7 Temporary Files cache. Try clearing your cookies and files (via the Internet Options applet in the Tools menu of IE7, or Vista's Control Panel). If the problem persists, a malware scanner (like A-squared or some other good malware scanner and remover that's 64-bit compatible) should be available to download. Run a malware scan, and remove anything detected. As for the script error, some spyware like to popup random HTML pages (usually hidden inside the spyware itself) and cause a script error.

Matthew Coburn

size (my C drive and E drive share the same hard drive). Does Windows XP provide a tool to adjust the partition size or is there any shareware or freeware that does the job or do I have to get some commercial software to do it?

Alex Wong

A We always use GParted, from <http://gparted.sourceforge.net/> (or on our cover disc). GParted is free and uses a small Linux OS to take over your PC, letting you create, remove, resize and copy partitions, which will allow you to reorganise your hard disk's space on your XP machine.

Editor

LINUX

CONNECTING LINUX TO MODEM

Q After reading your November mag I got up the courage to try Linux — first PCLinuxOS 2007 and next Freespire 2.0, Editor's Choice and Highly Recommended respectively. They are supposed to work straight out of the box, but I can't connect to the internet through my NetComm NB5Plus4 modem. The modem works with Windows-based systems, and it was even easier to get working with Apple hardware!

Andrew

WINDOWS

PARTITIONING TOOL

Q My C drive is gradually running out of space and I need to increase the partition



▲ If you're having problems printing from the Web, the first thing you should try is clearing your Cookies.

What's taking up all your hard disk space? WinDirStat should help you to find out. ▶



TIP...

WINDOWS SERVER 2003

USE WINDOWS COMPUTER MANAGEMENT CONSOLE TO CHECK OUT WHICH FILES ARE OPEN ON YOUR NETWORK... AND WHO'S OPENED THEM

A server OS has to keep track of who's doing what and who's using what at all times. This is particularly important when a server is used to share files in a network. Often a user will close a computer without closing a file, or the client PC may crash, leaving numerous network files open. When this happens, the Windows server may lock the file simply because it doesn't know that the user hasn't logged off. The first thing that the network administrator will know of this is when a user calls to complain that a file that was previously available cannot now be edited. Windows 2000, XP and Windows 2003 servers show open files and any locks in the Computer Management MMC. Launch the console by typing

'compmgmt.msc' in the run dialog. Alternatively, right-click over My Computer and choose Manage from the menu and then expand the shared folders tree. It contains three tools: Shares, Sessions and Open Files. Respectively, these provide an overview of what shares are available on the server, who is currently accessing it and what files are open. A number in the Locks column shows the number of locks on the file. Right-click and clear locks if it is necessary. The Computer Management Console can also be used to produce lists of shares, open files and sessions. Just right-click over any of the folder tree items and choose Export List to produce a text-formatted list for use in any other program.



A1 I have the same model of modem as you (NB5Plus4) and had the exact same issue that you are having.

The problem is that the modem does not correctly supply DNS information to Linux-based systems (possibly all Unix systems too), and the way that I found to solve this issue was to find the DNS servers supplied by your ISP (which can be found in the modem's web configuration in Advanced Modem Configuration > Status > Connection Status under Primary DNS) and enter them manually into either the Linux distro's GUI network configuration or in the /etc/resolv.conf configuration file with the following syntax:

```
nameserver XXX.XXX.XXX.XXX (where the X's
represent the IP address)
```

You can also use any other DNS servers that you wish — for example, I use OpenDNS for my DNS servers so I have:

```
nameserver 208.67.222.222
nameserver 208.67.220.220
```

(In my /etc/resolv.conf file.) There may however be a problem with the /etc/resolv.conf file being overwritten by automatic network configuration programs, but you will have

to look up distro-specific information in regards to this.

In the latest version of Ubuntu (7.10) and Ubuntu-based distros with the latest updates applied, I have found that there is no longer a problem with receiving the correct DNS servers from the modem — this was apparently due to a patch in the libc library.



BY JAMES MACFARLANE

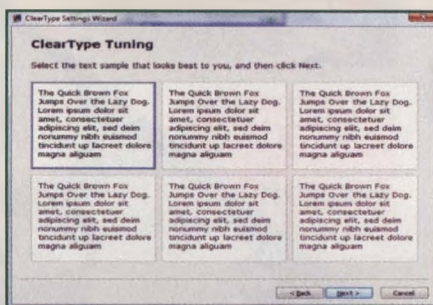
James is 19 and has been working with PCs from an early age. He's currently studying a Diploma of Information Technology at TAFE.

TIP...

ENABLING CLEARTYPE FONTS

ON LCD DISPLAYS, CLARITY FONTS APPEAR SMOOTHER AND LESS JAGGED

ClearType is a soft that improves the (Liquid Crystal Display) screens and flat panel technology, the words as sharp and clear



ClearType is a soft that improves the (Liquid Crystal Display) screens and flat panel technology, the words as sharp and clear

1 ClearType Disabled

You can use ClearType fonts on any LCD display. The system works on a pixel level, effectively anti-aliasing the pixel by disabling one of the RGB values in adjacent pixels. The result is far-smoother-looking fonts. If text appears ugly, especially on the web, then this might be a solution. See the image above for a close-up of text without the ClearType effect.

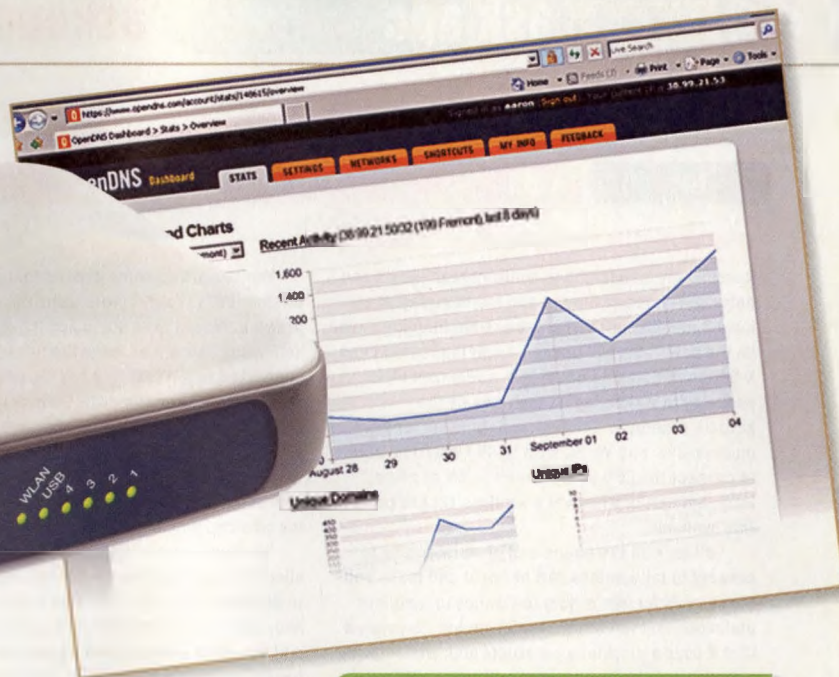
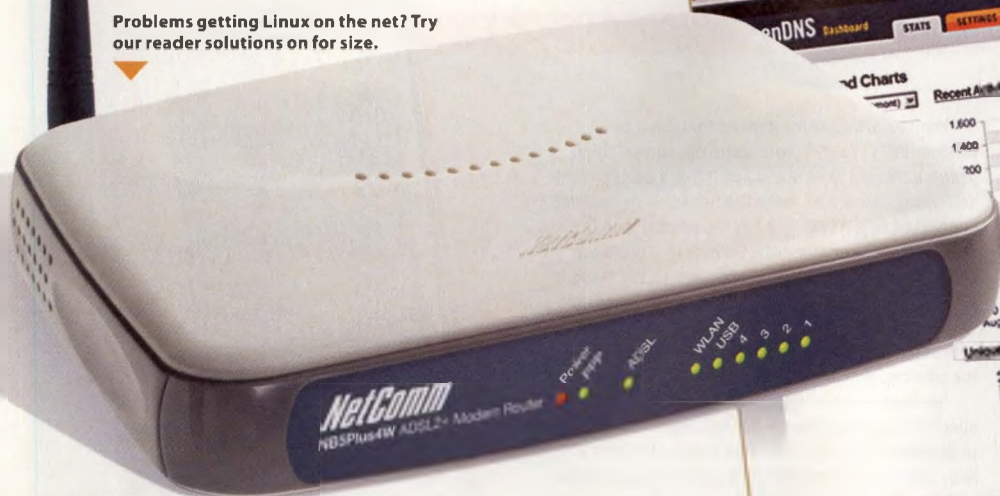
2 Download ClearType Tuner

Microsoft has a great PowerToy to adjust your ClearType settings. Go to www.microsoft.com/typography/ClearTypePowerToy.msp and download the application, which works in Vista and XP. It will present a series of examples and you can choose the one that looks smoothest. This will set ClearType up best for you and your monitor.

3 ClearType Enabled

After a few simple dialog options, ClearType will be turned on. Under most circumstances it's a fantastic improvement, but graphic designers looking for absolute accuracy in their pixels may not want it switched on, and certain older games running in Windows may not work very well with it turned on either.

Problems getting Linux on the net? Try our reader solutions on for size.



A² Andrew, I'm assuming here that you're connecting up with USB. Might be worth getting an Ethernet cable and connecting up that way for Linux. If the modem is close to the computer you can get a short Ethernet cable for around \$4 to \$6 at office supplies stores.



BY AARON MASON

Aaron is a Linux fanatic and will run Linux on anything if it has a processor. He studies IT at Charles Sturt University and works in its IT department as a programmer on Unix systems.

NETWORKING

BROADBAND SPEED MYTH

Q I have a problem with my internet that has been ticking me off for a while now. Every time I download a file, the download speed starts at 100Kbit/s for about half a second, then it works its way down to 50Kbit/s in the next half a second until it's down to 29Kbit/s even though our internet is supposed to be rated at 256Kbit/s with our Bigpond Liberty plan. An IT guy that lives near me says that it's probably because of the Commander Pulse system that we use for the phones in the shop downstairs. We got a guy in

from Commander to come and fix this when we had dialup but now we have broadband he has no idea what would be slowing the internet down so much. The IT guy says that it's probably because the line gets split multiple times: first for the actual line to the local phone and to the modem but the line that goes to the local phone is also split to go to the fax machine as well. I have a Realtek PCI-E Gigabit Ethernet NIC network adapter and our broadband modem is a Thomson SpeedTouch 350 connected to the computer via LAN cable. PLEASE HELP!

Hayden Pyneappels

A Your internet service is 256 kilobits per second, but your computer displays the download speed in kilobytes per second. There are 8 bits in every byte, so the best download speed achievable on a 256 kilobit per second service would be 32 kilobytes per second. ADSL has about a 10% performance penalty due to the protocol used, so 29Kbit/s is actually maximum speed. The earlier speeds you mentioned (100Kbit/s, 50Kbit/s etc) are just the web browser pre-downloading some of the content before the actual download progress bar comes up (and getting its maths confused at the very start of the download).

Dan Warne

SECURITY

FREE ANTI-SPYWARE

Q Is there a shareware or freeware program that does a good job of checking and removing spyware? If not, then which is a good piece of commercial software that does the job?

Alex Wong

A If you're using Windows, there's Microsoft's own free anti-spyware program, Windows Defender. It's already part of Vista, but it's a free download for Windows XP and Server 2003. There's also the PC Tools Spyware Doctor Starter Edition — this is a free 'lite' version of the acclaimed commercial Spyware Doctor but is only available as part of Google Pack, a nifty collection of software from Google at <http://pack.google.com>. The Spyware Doctor Starter Edition offers full scan and removal of threats and basic real-time protection, and can be selected just by itself from within the Google Pack suite. Spyware Terminator is another freeware program that's impressed critics, while Spybot Search & Destroy, SpyCatcher Express and Ad-Aware are also effective and free. One program we also recommend is HijackThis, which specialises in detecting and removing browser hijackers.

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TIP... VOIP

USE VOIP ON YOUR WI-FI MOBILE

Recently my mobile phone contract reached its end date. So I shopped around and found myself at my local 3 mobile outlet where they were flogging Skype on the new 'X-Series' phones. I was interested in an X-Series, the Nokia E65. This is a very cool little phone, with a slide action that reveals the keypad, Bluetooth, SD card, web browser, camera, media player and Wi-Fi. With Wi-Fi I would be able to connect the E65 to my wireless LAN at home, work, hotspot or wherever a wireless access point was available.

So I took up the phone and plan, intending to connect to my wireless LAN at home and make VoIP Skype calls for free or very low prices to landlines and mobiles. I wanted to use Skype but discovered that it uses a proprietary protocol and, while having a respectable call rate, is not untimed. In this particular offer, it was restricted to 3's 3G web services. So I searched Google and found some very cheap call rates from Pennytel and MyNetFone. Both Pennytel and MyNetFone use SIP which stands for Session Initiation Protocol, the most popular VoIP standard because it's open and free. Like an ever-growing number of mobiles the E65 features a built-in SIP function: you just install a provider's custom VoIP settings on it. MyNetFone has a VoIP settings download for Nokia phones that will help you do this.

So now I use the E65 to connect to the wireless LAN at home or work and make dirt cheap VoIP calls to landlines or mobiles anywhere in Australia or a long list of other countries. The call rates are excellent compared to conventional landline rates and are massively cheaper if you were insane enough to call overseas from your mobile using the GSM network.

You can set up some phones to default to internet calls (VoIP) before using the normal GSM network. When I'm at home and make a call I pay the VoIP rates and when I leave the house — or I am not connected to a WLAN — I pay the normal mobile phone rates, all seamlessly. Considering there are many free wireless hotspots appearing nationwide it leaves the door wide open for VoIP on the move, not to mention the expanding 3G network that comes with some very reasonable data allowances included in some cap plans.

You don't have to be limited to an inbuilt SIP client; it is possible to use the web from your phone to WAP-friendly pages (such as Pennytel's) that allow you to connect VoIP calls between your mobile and any other number. Or it's possible to use Java-based applications like Fring, which can connect using SIP via Wi-Fi or mobile web access. I particularly like Fring as it can connect to Skype, SIP, MSN and a few other instant messaging services via a single user friendly interface. Did I also mention it was free?

If you sit down with the abacus you will soon figure out you can end up using VoIP for the majority of your calls and sign up for a lower cap plan, saving you substantial amounts of money. So, the next time you're looking at upgrading your mobile phone, consider VoIP capability as a key feature.



BY GUS CAMPBELL

Gus is a systems administrator for an engineering company. He's been working in IT for 8 years now, but has been an enthusiast since "the fantastic" Commodore 64.



INPUT DEVICES

ROSTRUM OR SCANNER

Q I've got a reasonably good camera and tripod but need to convert some pages of old books into images for a reference resource web site. Users need to be able to zoom in fairly close to see the details in the drawings. Should I use the camera in a rostrum configuration or would I be better off getting hold of a scanner?

Michelle Marchman

A While it's possible to take reasonably good photographs of written pages or images using a camera — especially with the specialist lighting configuration of a rostrum camera — there's no way that you're going to get anywhere near the resolution of a scanner.

At 600dpi a scanner has a pixel count getting on for 50MP, whereas a decent camera will have a fifth of that. Another thing to consider is that the scanner has a viewpoint that's infinitely

far away longitudinally, but around 30cm away laterally — scanning face down on a flat piece of glass means that this has no consequence for anything flat, but 3D objects have a 'weird' appearance. Scanners are also so cheap nowadays that you might as well get one anyway.

However, if the number of pixels is not so much of an issue, a rostrum camera can be used to get good 3D-looking images, so your books will look like books. You can get a decent depth of field by stopping the lens down, while if you use the self-timer, even a wobbly tripod will let your camera take sharp pictures.

WINDOWS

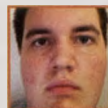
TROUBLE DELETING FILES

Q I'm having some troubles deleting files. I have quite a few files in 'Deleted items' that will not delete. Some new files will delete, but others not. What am I doing wrong and what do I have to do?

Aat Verhulst

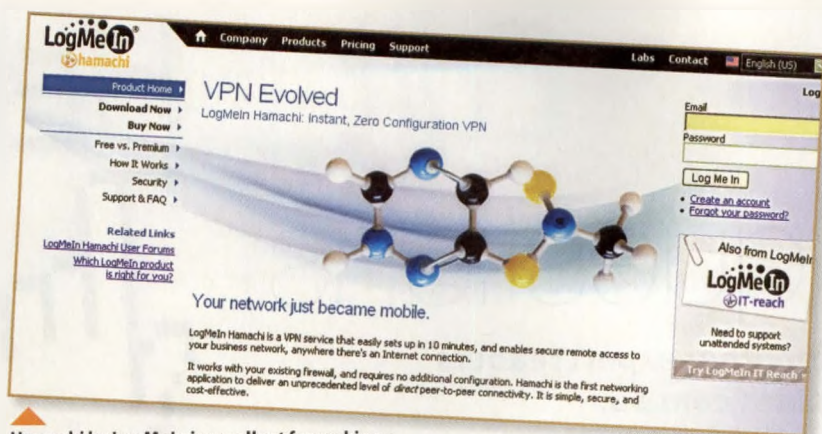
A When you access a file, the program locks it. Deleting the file is impossible because it's locked. Sometimes you'll find you can have an issue with programs that don't remove the lock on the file. It's common to get these problems with earlier OSs, like Windows 95 and 98.

I would suggest you boot into Safe Mode (by tapping F8 while your computer's POST or logo screen is showing before Windows has loaded), logging on and then deleting the files from there. If all else fails, download the free Eraser utility (www.heidi.ie/eraser/) and delete the files using the program. Using a File Shredding Tool is better than deleting files via Recycle Bin or Shift+Delete.



BY MATTHEW COBURN

Matthew is a student, who scripts programs and games in his spare time.



Hamachi by LogMeIn is excellent for making a VPN over the internet.

NETWORKING

LINK HOME NETWORKS VIA THE NET

Q Is there a simple and inexpensive way to link two (or more) home networks via the internet to create one virtual network? The idea being that users on one network can see the individual network shares on the other. Another use would be to allow network-capable game consoles (like the Xbox) located on each network to connect together for system-link gaming.

Martin Ledwich

A The first option would be to buy some expensive VPN hardware. This is out of the question for most users, so a company called LogMeIn made an excellent program for making virtual private networks (VPNs) over the internet, called Hamachi. This little program (under 1MB) can be found at <http://hamachi.cc>. Download and install it on all the computers you wish to be in the VPN. Once installed, run it and follow the tutorial to gain a better understanding of its inner workings.

It will assign you an IP (don't worry, all previous network connections will remain untouched and functional) and you will have to choose a 'nickname' for your PC. Then on one computer create a network. Name it what you like and password it if you wish. Once that is done (the first computer will auto-join its newly

created network), connect all the other clients to that network. Once done you will be able to see the IPs of each computer in the network and their nicknames. Samba (windows file sharing) is fully operational, and easiest to use by typing \\IPGoesHere into your explorer address bar. It then acts exactly like a normal LAN, fully functional to the best of my knowledge. I find it handy for LAN games over the internet (to bypass annoying lobbys and port forwarding) and also for letting my family access Samba shares on my server (which is behind IPcop with my computer).

Now, in terms of the Xbox over a VPN, Hamachi won't help you there; however, there are a few programs that 'tunnel' the Xbox packets over the internet, archiving basically what Hamachi does. I prefer Xbox connect (<http://xbconnect.com/>); however, xlink kai (www.teamxlink.co.uk/) is also a good one. With both you have to register before being able to play the games they have listed there, or create your own game and password it if you want it to be private. Both have detailed-enough instructions to get them started. Both support other consoles, like the PS2, PS3, Gamecube, 360 and the PSP — however, only limited games on each.



BY MAX KAYE

Max is a student entering year 11 and suffers from a passion for mathematics, science and computers.



INTELLIKID

Answers from young superbrains

WINDOWS

ENLARGING BITMAPS

Q When using Paint in Windows Me/XP, if an image larger than the current bitmap is pasted, Paint automatically enlarges the current bitmap to accommodate the larger size of the image being pasted. How can I change it so that Paint will prompt me to enlarge the bitmap, like earlier versions?

Bruce Pierson

A It's true that using Paint in older versions of Windows features the enlarging prompt, and also capability to make GIFs transparent. You don't need to change anything, just download the older version of the app. To do this, you need to go to the FTP site <ftp://ftp.microsoft.com/softlib/MSLFILES>, logging in as an anonymous user, then download the executable Paint95.exe or PaintNT.exe (from 95 and NT4 respectively). Note that navigating to the folder MSLFILES will take a while because it is big. Place the program in a folder where you want to extract Paint and run the self-extracting archive. There will be MSPaint.exe along with some DLL files — just run MSPaint.exe.



BY DELAN AHMAD

Delan is an enthusiastic tweaker of different Windows operating systems in the Virtual PC environment and is a highly competitive Halo gamer among his friends.

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Q Whenever I boot my computer (ASUS P5K-E with an Intel Q6600), I get the following error — POST "INTEL CPU UCODE LOADING ERROR" — which forces me to press F1 on every boot. What is this error and how do I get rid of it?

Philip Podgorski

Q I am having trouble dual-booting Vista Home Basic and Ubuntu. First I had Vista Basic installed on HDD 1, and Vista Ultimate on HDD 2, but I have since formatted HDD2 and installed Ubuntu on it. Now whenever the dual-boot screen appears it doesn't recognise Vista is no longer on HDD 2. If I manually boot from the Ubuntu HDD it still looks for the Windows boot files and says that they don't exist. I have also tried changing my Ubuntu HDD to the master drive but this ends with a GRUB error. MSconfig also shows Vista still installed on my now Ubuntu drive. How do I tell Vista or my bios that Ubuntu is now on my second drive? I have tried re-formatting several times but no luck yet.

Matt Duncanson

Q I have some trouble deleting files. I have quite a few files in Deleting Items which will not delete. What do I have to do to delete these files?

Aat Verhulst

Q I removed Messenger 7.5 from my Windows XP and installed Windows Live Messenger. Now when I start Live Messenger, I receive the following error message: "The application failed to initialize properly (0xc0000005). Click OK to terminate the

application." Do you know what's caused the error and how can I fix the problem?

Len

Q I've managed to save an old Acer TravelMate 213TX from certain death. I was visiting my friend one day to find a gutted laptop laying on the trash heap. The HD, CD-ROM and battery have been scalped, but fortunately the power supply, floppy and RAM remain. The BIOS is ancient and very limiting as there are only three boot alternatives ie. CD-ROM, HD and floppy. Now, assuming I have a bootable USB drive with a lightweight live version of Linux installed, is there any way I can boot the USB stick from the floppy disk? Should I cast the beast back to the trash heap?

Benjo Charlie

Q I have three printers at home that all do a specific job. My default is a network colour laser which mainly prints emails and word processing documents in grey scale. I have a high-quality A4 photo printer for high-quality photos and the occasional CD. I also have an inkjet MFC that does general colour printing and photocopying. Is there a way to make certain programs print to a certain printer by default, and possibly with different printing preferences?

Tony Farrell

Q Recently I bit the Apple and bought a 24in iMac about three months ago and have had nothing but trouble with it. Out of the packing it was a lemon and after over twenty hours on the phone to the Apple help line with issues such as why it constantly locked up, why

programs dropped out with no warning etc., and two reinstalls that didn't fix anything, I asked for and received a refund. I have spoken to a friend who has had a similar experience with the 24in iMac, and wondered if any of your readers had experienced anything similar.

MP Caldecott

Q What is the best software for backing up Outlook Express files and folders?

Allan Potter

Q I'm the IT manager for a struggling temporary community radio station in Victor Harbor South Australia. We have concluded that a niche is opening for us to provide a truly dedicated internet radio service. To provide reliable streaming should we: 1) Stream to an existing ISP server, 2) Stream direct using an existing ISP bandwidth, or 3) Become our own ISP and stream direct (with possible off-shoot of selling bandwidth)? And what hardware is required and recommended to achieve each option? We have noted that radio internet sites have largely been accessible to Windows users only, and as Linux converts (Ubuntu) we want to be available to as wide a range of audience as possible. Therefore, is there particular web site software available to allow this?

Darrell DeLaine

Answer the questions

If you feel you can answer one of the questions above, please send the answer to askapc@acpmagazines.com.au, with a photo of yourself.

APC will give any readers whose answer is published a small promotion box in which they can promote their business with a mission

statement or slogan, and a URL or phone number. Try to make the answer no longer than 200 words, but less is better. If none of our

readers can offer an answer to a particular question, we will turn to our list of industry experts to provide a solution for your queries.



Building a small business network

WHAT'S COVERED

Overview

In this new Masterclass, Jarrod Spiga walks you through the process of setting up a small business IT infrastructure. No IT training is assumed. At the end of the Masterclass, you should know the fundamentals of setting up a server-based network to run any small business.

ABOUT YOUR TUTOR

Jarrod Spiga

Jarrod is an infrastructure architect and data centre engineer for Visionbytes, a company that provides digital video mining technologies and services to some of the world's largest media companies and many government departments worldwide. Jarrod also works as a technical consultant, assisting businesses during infrastructure installation and upgrade projects.



COURSE SCHEDULE

- Sept '07 Analysis
- Oct '07 Preparation
- Nov '07 The Windows path, part 1
- Dec '07 The Windows path, part 2
- Jan '08 The Windows path, part 3
- Feb '08 The Linux path, part 1
- Mar '08 The Linux path, part 2
- Apr '08 The Linux path, part 3
- May '08 Server hardware
- Jun '08 Mac in the mix
- Jul '08 System management tools
- Aug '08 Swing migrations

You might be handy with a PC, but what if you had to look after the back end of your business? How would you set up and manage the servers, the network and the server applications?

Part 7 Linux groupware and collaboration

Once your LDAP installation is authenticating users on your network, we can extend the infrastructure to provide essential collaboration tools to help users work more efficiently.

A groupware suite is almost always essential for most businesses in order to ensure effective collaboration between users and departments. Just as most people take email for granted these days, the ability to coordinate staff and resources via groupware suite tools is generally only missed when it's not available.

Pre-packaged, paid-for groupware suites such as Zimbra can be installed on Linux, but in line with the goals of our Linux SBS deployment — a server with minimal monetary cost without consideration for labour cost — this article will demonstrate how to install the freely available Horde Groupware suite, which mimics a typical Microsoft Exchange installation.

A GENTLE REMINDER...

As per the last part of this series, the instructions detailed in this Masterclass apply to a CentOS 5 server but should apply to most Linux distributions. The applications that are used in this Masterclass are available as binaries on most distributions, but you may have to manually compile some packages mentioned in this guide depending on the distro that you have chosen.

EXTEND THE SCHEMA

The LDAP schema that was created in last month's guide is adequate for basic authentication purposes but does not include fields that record mail attributes including mailbox location and email aliases. Creating such a schema can be time-consuming, but the JAMM (the Java Mail

Manager) project on Sourceforge (<http://sourceforge.net/projects/jamm/>) provides a suitable and freely available schema — along with a handy Java-based application which can be used to configure attributes within the JAMM schema via a GUI.

Download the .tar.gz file from Sourceforge and extract it under your /root directory. Copy the jamm.schema file from your extracted archive to the /etc/openldap/schema directory. Then, open the /etc/openldap/slapd.conf file in your favourite text editor and add the following line towards the top of the file:

```
include /etc/openldap/schema/jamm.schema
```

And add the following lines towards the end of the file (replacing the dc values for what you used for your domain):

```
access to dn.regex="*.jvd=([^\,]+),o=mail,dc=contoso,dc=corp"
attr=userPassword
by self write
by group/jammPostmaster/roleOccupant.expanded="cn=postmaster,jvd=$1,o=mail,dc=contoso,dc=corp" write
by dn="cn=dovecot,dc=contoso,dc=corp" read
by anonymous auth
```




```

root@mon-01:/etc/postfix/ssl
[root@mon-01 ssl]# openssl req -new -key smtpd.key -out smtpd.csr
Enter pass phrase for smtpd.key:
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [GB]:AU
State or Province Name (full name) [Berkshire]:New South Wales
Locality Name (eg, city) [Newbury]:Sydney
Organization Name (eg, company) [My Company Ltd]:Contoso Limited
Organizational Unit Name (eg, section) []:
Common Name (eg, your name or your server's hostname) []:mail.contoso.com
Email Address []:postmaster@contoso.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:wah123
An optional company name []:
[root@mon-01 ssl]#

```

Trust me: A self-signed certificate can be used to encrypt data even though authentication cannot be verified.

Next, obtain the uid and gid for the account you have just created. You can obtain this by running:

```
tail -1 /etc/passwd
```

POSTFIX AND LDAP

The next step is to get Postfix working with your LDAP directory. Create a file named `ldap-accounts` at `/etc/postfix` and populate it with the following data:

```

server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp
query_filter = (&(objectClass=JammMailAccount)(mail=%s)(accountActive=TRUE)(delete=FALSE))
result_attribute = mailbox
bind = no

```

This file is responsible for locating LDAP accounts that are associated with a mailbox. The next file to create in the same directory is `ldap-accountsmap`. This file maps primary email addresses to mailboxes and should contain:

```

server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp
query_filter = (&(objectClass=JammMailAccount)(mail=%s)(accountActive=TRUE)(delete=FALSE))
result_attribute = mail
bind = no

```

The next file — `ldap-aliases` — defines what other email aliases point to which mailboxes. This file should contain the following:

```

server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp
query_filter = (&(objectClass=JammMailAlias)(mail=%s)(accountActive=TRUE))
result_attribute = maildrop
bind = no

```

Fourth on the list of files to create is `ldap-domains`, which allows Postfix to determine which domains it should accept email for. The contents of this file should be:

```

server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp

```

```

by * none
access to dn.regex="*.jvd=([^,]+),o=mail,dc=contoso,dc=corp"
by self write
by group/jammPostmaster/roleOccupant.expand="cn=postmaster,jvd=$1,o=mail,dc=contoso,dc=corp" write
by * read

```

```
ldapadd -x -D "cn=root,dc=contoso,dc=corp" -W -f ~/jamm.ldif
```

Finally, set a password for the dovecot service account and make a note of it:

```
ldappasswd -D "cn=root,dc=contoso,dc=corp" -x -W -S "cn=dovecot,dc=contoso,dc=corp"
```

MORE TROUBLESOME ADMINISTRATION

The default installation of CentOS (and many other distributions) pops the Sendmail mail Transfer agent (MTA) onto your server. Sendmail is one of the most robust MTAs available, but it isn't exactly the easiest to configure or administer. In order to make your job easier, remove it from your server and replace it with Postfix. While we're at it, we may as well install the other components required for our mailing system:

```

yum remove sendmail
yum install cyrus-sasl cyrus-sasl-devel cyrus-sasl-gssapi cyrus-sasl-md5 cyrus-sasl-plain postfix dovecot

```

Once Postfix has been added, we need to add another service account; one that is responsible for writing the contents of received mail destined to the virtual mailer host to the local filesystem (it's generally best to configure Postfix to use virtual mailer hosts as this provides a more expandable and flexible mail solution). This account should be local, and not created in the directory. If this account was created in the directory, incoming mail will bounce when the directory is inaccessible. If the account is local, mail will be queued in a spool directory until the directory is online again:

```
adduser vmail
```

These provide JAMM and Dovecot (the POP3 and IMAP agent that will be installed later) access to the relevant schemas within your directory.

Next, we need to add the accounts that JAMM and Dovecot will use to access the directory. Create a new `ldif` file under your `/root` directory and name it `jamm.ldif`. Insert the following lines into the file:

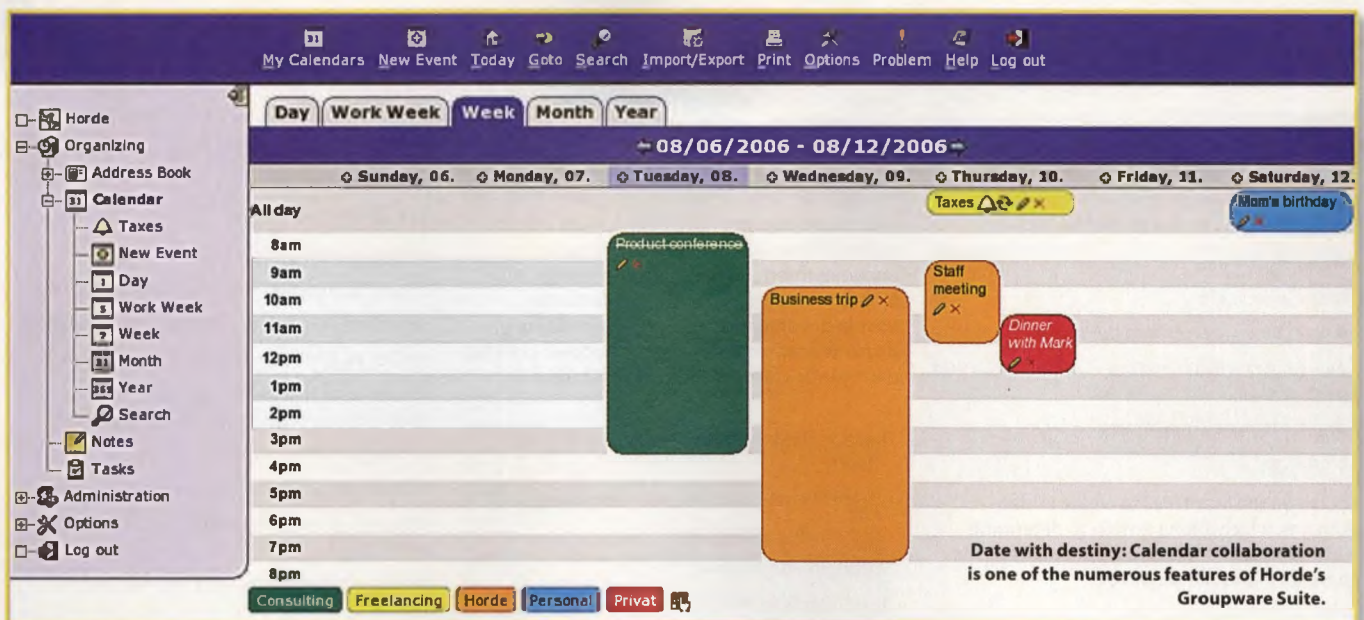
```

# Create a generic mail object for JAMM/Postfix
dn: o=mail,dc=contoso,dc=corp
objectclass: top
objectclass: organization
o: mail

# Create a service account for Dovecot
dn: cn=dovecot,dc=contoso,dc=corp
objectclass: top
objectclass: inetOrgPerson
objectclass: posixAccount
objectclass: shadowaccount
cn: Dovecot
sn: dovecot

```

Once you've saved the file, execute the following command to import this data into your directory (you'll need to supply your rootdn password in order for execution of this command to succeed):



```
by * none
access to dn.regex="*.jvd=([^\,]+),o=mail,dc=contoso,dc=corp"
by self write
by group/jammPostmaster/roleOccupant.expand="cn=postmaster,jvd=$1,o=mail,dc=contoso,dc=corp" write
by * read
```

These provide JAMM and Dovecot (the POP3 and IMAP agent that will be installed later) access to the relevant schemas within your directory.

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```
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dn: o=mail,dc=contoso,dc=corp
objectclass: top
objectclass: organization
o: mail

# Create a service account for Dovecot
dn: cn=dovecot,dc=contoso,dc=corp
objectclass: top
objectclass: inetOrgPerson
objectclass: posixAccount
objectclass: shadowaccount
cn: Dovecot
sn: dovecot
```

Once you've saved the file, execute the following

command to import this data into your directory (you'll need to supply your rootdn password in order for execution of this command to succeed):

```
ldapadd -x -D "cn=root,dc=contoso,dc=corp" -W -f ~/jamm.ldif
```

Finally, set a password for the dovecot service account and make a note of it:

```
ldappasswd -D "cn=root,dc=contoso,dc=corp" -x -W -S "cn=dovecot,dc=contoso,dc=corp"
```

MORE TROUBLESOME ADMINISTRATION

The default installation of CentOS (and many other distributions) pops the Sendmail Mail Transfer agent (MTA) onto your server. Sendmail is one of the most robust MTAs available, but it isn't exactly the easiest to configure or administer. In order to make your job easier, remove it from your server and replace it with Postfix. While we're at it, we may as well install the other components required for our mailing system:

```
yum remove sendmail
yum install cyrus-sasl cyrus-sasl-devel cyrus-sasl-gssapi cyrus-sasl-md5 cyrus-sasl-plain postfix dovecot
```

Once Postfix has been added, we need to add another service account; one that is responsible for writing the contents of received mail destined to the virtual mailer host to the local filesystem (it's generally best to configure Postfix to use virtual mailer hosts as this provides a more expandable and flexible mail solution). This account should be local, and not

created in the directory. If this account was created in the directory, incoming mail will bounce when the directory is inaccessible. If the account is local, mail will be queued in a spool directory until the directory is online again:

```
adduser vmail
```

Next, obtain the uid and gid for the account you have just created. You can obtain this by running:

```
tail -1 /etc/passwd
```

POSTFIX AND LDAP

The next step is to get Postfix working with your LDAP directory. Create a file named `ldap-accounts` at `/etc/postfix` and populate it with the following data:

```
server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp
query_filter (&(objectClass=JammMailAccount)(mail=%s)(accountActive=TRUE)(delete=FALSE))
result_attribute = mailbox
bind = no
```

This file is responsible for locating LDAP accounts that are associated with a mailbox. The next file to create in the same directory is `ldap-accountsmap`. This file maps primary email addresses to mailboxes and should contain:

```
server_host = localhost
server_port = 389
search_base = dc=contoso,dc=corp
```




```
query_filter = (&(objectClass=JammMailAccount)
(mail=%s)(accountActive=TRUE)(delete=FALSE)
)
```

```
result_attribute = mail
```

```
bind = no
```

The next file — `ldap-aliases` — defines what other email aliases point to which mailboxes. This file should contain the following:

```
server_host = localhost
```

```
server_port = 389
```

```
search_base = dc=contoso,dc=corp
```

```
query_filter = (&(objectClass=JammMailAlias)(mail=%s)(accountActive=TRUE))
```

```
result_attribute = maildrop
```

```
bind = no
```

Fourth on the list of files to create is `ldap-domains`, which allows Postfix to determine which domains it should accept email for. The contents of this file should be:

```
server_host = localhost
```

```
server_port = 389
```

```
search_base = dc=contoso,dc=corp
```

```
query_filter = (&(objectClass=JammVirtualDomain)(jvd=%s)(accountActive=TRUE)(delete=FALSE))
```

```
result_attribute = jvd
```

```
bind = no
```

```
scope = one
```

The final new file that you will need to create is `header_checks`, which will be used for content filtering in order to prevent spam:

```
/^Received:/ HOLD
```

After those five files have been added, edit the `main.cf` file so that the following lines are uncommented and set as appropriate for your infrastructure (you may like to refer to the Postfix documentation — www.postfix.org/documentation.html — for a rundown on what each configuration directive is used for):

```
header_checks = regexp:/etc/postfix/header_checks
```

```
myhostname = external_hostname.contoso.com
```

```
mydomain = contoso.com
```

```
myorigin = $mydomain
```

```
inet_interfaces = all
```

```
mydestination = $myhostname, $mydomain, localhost
```

```
unknown_local_recipient_reject_code = 550
```

```
mynetworks_style = host
```

```
relay_domains = $mydestination
```

```
mail_spool_directory = /var/spool/mail
```

```
smtpd_sasl_auth_enable = yes
```

```
smtpd_sasl_local_domain =
```

```
smtpd_recipient_restrictions = permit_sasl_authenticated,permit_mynetworks,reject_unauth_destination,permit
```

```
smtpd_sasl_security_options = noanonymous
```

```
broken_sasl_auth_clients = yes
```

```
smtp_sasl_auth_enable = no
```

```
smtpd_use_tls = yes
```

```
smtpd_tls_auth_only = yes
```

```
smtpd_tls_key_file = /etc/postfix/ssl/smtpd.key
```

```
smtpd_tls_cert_file = /etc/postfix/ssl/smtpd.crt
```

```
smtpd_tls_CAfile = /etc/postfix/ssl/cacert.pem
```

```
virtual_alias_maps = ldap:/etc/postfix/ldap-accountsmap,ldap:/etc/postfix/ldap-aliases
```

```
virtual_transport = virtual
```

```
virtual_mailbox_base = /home/vmail/domains
```

```
virtual_mailbox_maps = ldap:/etc/postfix/ldap-accounts
```

```
virtual_mailbox_domains = ldap:/etc/postfix/ldap-domains
```

```
virtual_minimum_uid = 1000
```

```
virtual_uid_maps = static:1000
```

```
virtual_gid_maps = static:1000
```

In the above configuration, ensure that the `myhostname` and `mydomain` directives refer to externally accessible fully-qualified domain names — your internal network name should not be used for these domains. In addition, ensure that the `virtual_uid_maps` and `virtual_gid_maps` directives refer to the uid and the gid of the vmail account that you created earlier.

So far we've told Postfix how to use your LDAP directory, as opposed to telling it that it should authenticate users against the directory. You should also verify what methods are used for authentication for Postfix within the Simple Authentication and Security Layer (SASL) libraries.

On an x86 system, you should open `/usr/lib/sasl2/smtpd.conf` in your favourite text editor. On an x64 system, you should open `/usr/lib64/sasl2/smtpd.conf`. Ensure that the file contains both of the following lines:

```
pwcheck_method: saslauthd
```

```
mech_list: plain login
```

Next, edit the `/etc/sysconfig/saslauthd` file to ensure that the ldap authentication mechanism is used:

```
MECH=ldap
```

Finally, the `/etc/saslauthd.conf` file should also be edited so that it can locate the authentication

At your fingertips: All of the relevant organisation information is presented immediately after logging on to the Groupware suite.

FOR OTHER MAIL SERVERS TO ESTABLISH SECURE SMTP CONNECTIONS TO YOUR SERVER, YOU NEED AN SSL CERTIFICATE

[Log out](#) :



Jamm

0.9.5

ADD ALIAS for domain is-alias.test

Alias Name: @is-alias.test

Name:

Destinations:

Password: (Optional)

Retype Password: (Optional)

Note: If a password is not entered, only the domain or site administrator can manage the new alias.

credentials for users that may log on to Postfix for authenticated relay:

```
ldap_servers: ldap://127.0.0.1
```

```
ldap_search_base: dc=contoso,dc=corp
```

```
ldap_filter: (&(objectClass=JammMailAccount)(mail=%u@%r)(accountActive=TRUE)(delete=FALSE))
```

ADDING SECURITY

In order to allow other mail servers to establish secured SMTP connections to your mail server, you'll need to provide Postfix with an SSL certificate. While you could purchase such a certificate from a trusted certificate authority (CA) such as Verisign or Thawte, many businesses only require the ability to encrypt data between endpoints — and the identity verification features of a trusted SSL certificate are not required. To start generating any SSL certificate (be it from a CA or self-signed), issue the following commands:

```
mkdir /etc/postfix/ssl
```

```
cd /etc/postfix/ssl/
```

```
openssl genrsa -des3 -rand /etc/hosts -out smtpd.key 1024
```

When you enter the third command, be sure to make a note of the passphrase that you enter. The following commands should then be entered to secure your key and to generate the certificate signing request:

```
chmod 600 smtpd.key
```

```
openssl req -new -key smtpd.key -out smtpd.csr
```

After you issue the second command shown, you'll be asked to enter in the details that will be presented to external parties when they download the certificate. It is imperative that the common name entered in the applet matches what you have supplied to the myhostname directive within your Postfix configuration.

If you are obtaining a certificate from a CA, you'd then send the contents of the smtpd.csr file to the CA. If you are generating a self-signed certificate, issue the following command to generate your certificate, entering in the passphrase you noted above when prompted:

```
openssl x509 -req -days 3650 -in smtpd.csr -signkey smtpd.key -out smtpd.crt
```

Once your self-signed certificate is generated, you also need to generate another certificate — one that shows the issuer of your self-signed certificate. The process is similar to that you've just gone through and the following commands should do the job:

```
openssl rsa -in smtpd.key -out smtpd.key.unencrypted
```

```
mv -f smtpd.key.unencrypted smtpd.key
```

```
openssl req -new -x509 -extensions v3_ca -keyout cakey.pem -out cacert.pem -days 3650
```

AND ON TO DOVECOT

We've now completed our SMTP Server configuration. This allows email to come in to the system but does not allow users to retrieve their messages. That task can be performed by Dovecot via the POP3 or IMAP protocols.

The configuration of Dovecot is far simpler

Pump up the Jamm: Jamm provides a web interface which allows for the quick configuration of mail domains, mailboxes and aliases.

than that of Postfix. Edit the /etc/dovecot.conf file and uncomment or edit the following lines:

```
protocols = imap imap3 pop3 pop3s
ssl_disable = no
disable_plaintext_auth = no
first_valid_uid = 1000
last_valid_uid = 1000
first_valid_gid = 1000
last_valid_gid = 1000
default_mail_env = maildir:/home/vmail/domains/%d/%n
auth = default
auth_mechanisms = plain
auth_userdb = ldap /etc/dovecot-ldap.conf
auth_passdb = ldap /etc/dovecot-ldap.conf
auth_user = root
```

Next, we need to instruct Dovecot how to look users up in your directory. Create a new file in the /etc directory named dovecot-ldap.conf and populate it with the following:

```
hosts = localhost
dn = cn=dovecot,dc=contoso,dc=corp
dnpass = password
ldap_version = 3
base = dc=contoso,dc=corp
deref = never
scope = subtree
user_attrs = mail,homeDirectory,...
user_filter = (&(objectClass=JammMailAccount)(mail=%u)(accountActive=TRUE)(delete=FALSE))
pass_attrs = mail,userPassword
pass_filter = (&(objectClass=JammMailAccount)(mail=%u)(accountActive=TRUE)(delete=FALSE))
default_pass_scheme = CRYPT
user_global_uid = 1000
user_global_gid = 1000
```

NEXT MONTH

In next month's Masterclass, we add the extra network components that make administration easier, including the setup of a monitoring system to alert you when things go wrong.



workshops

HANDS-ON WITH HARDWARE AND SOFTWARE

HARDWARE

SOFTWARE

GADGETS

Access restricted content

Unfairly blocked from accessing content at work?

Jon Thompson shows you how to legally unblock sites.

REQUIREMENTS

A WEB BROWSER

Either Microsoft's Internet Explorer, or, even better, Mozilla Firefox.

FIREFOX'S TORBUTTON EXTENSION

Use this for easy access to the Tor onion proxy.

PHPROXY

For creating your own proxy server.

SQUID

Have this to install your own local proxy server to block content.

INSIDE INFO

- **www.publicproxyservers.com** maintains a long list of public proxy servers. To see the abilities of yours, try **www.stayinvisible.com**.

- PHProxy (**www.sourceforge.net/projects/poxy**) helps access content mistakenly blocked by a poorly configured local web proxy.

- You can find the Torbutton add-on for Firefox here: **https://addons.mozilla.org/en-US/firefox/addon/2275**.

- More information about the Tor proxy network itself is available from **www.torproject.org**.
- Finally, for system administrators who want to block content but don't want to spend much money, there's the open source Squid proxy (**www.squid-cache.org**).

Web content is often made deliberately or accidentally hard to access, so we'll look at how to access it. This doesn't include accessing anything illegal or anything that could land you in trouble. In fact, we strongly advise against any form of hacking. The techniques we present here are those that system administrators know about and are legal.

LOCAL DIFFICULTY

Blocking of content at a local level is usually achieved using a combination of firewall settings and a proxy server. While firewalls can keep an entire organisation safe on their own by imposing a blanket ban on all traffic for certain ports and destination addresses, proxy servers contain more intelligence and can filter traffic in more complex ways.

As the name suggests, they act as a proxy for a real server, and they can take many forms. For instance, mail proxies filter content for banned words, spam or obscenity, while web proxies filter surfing traffic for different aspects of content and URL.

To get all browsing traffic to go through a local web proxy sat behind the firewall, the system administrator will have had to set up each web browser on each machine to route traffic through this system. It's very simple to do, but it's also simple to change the settings back.

In Internet Explorer 7, simply click on the Tools menu and select the Connections tab of the resulting window. This brings up the LAN settings

window, the lower half of which deals with proxy settings. This contains the IP address of the web proxy. Untick the 'Use a proxy server for your LAN' box, press OK and OK again to dismiss the windows.

This procedure is similar for Firefox. From the Tools menu, select Options, then on the resultant window select the Advanced tab. On the sub-window, select the Network tab and press the Settings button. This brings up a sub-window. Select 'Direct connection to the Internet' and press OK.

If you can now access a site previously denied to you, you're going directly through your firewall instead of via the proxy server. Your system administrator has forgotten to deny a route to web traffic going direct. They need to set up a rule in the firewall so that only web connections on ports 80 and 443 (for HTTPS traffic) originating from the proxy server are allowed out. Traffic generated by pages loading should also go through the proxy for content checking.

You can also fool the local proxy server by connecting to your own remote proxy and having it relay traffic from a banned site. The local proxy only sees the connection from your browser to your private proxy, and never the connection to the site in question; you don't have to be running your own private web server to do this.

As long as the hosting service you use for your web space allows you to install PHP scripts, you can use the open source PHProxy. This will allow

The screenshot shows the 'Stay Invisible' website interface. The browser address bar shows 'http://www.stayinvisible.com/cgi-bin/emailtest.cgi?action=show&key=2150213463'. The page has a yellow header with the 'Stay Invisible' logo. Below the header, it says 'Location: Home / Email Test / Email Test Result'. There are two main sections: 'Main Menu' on the left and 'Email Test Result' on the right. The 'Main Menu' includes links like Home, Test Your IP, Test Your Email, Proxy Checker, Proxy Judge, Whois, Proxy Lists, Web Proxy List, and Message Encryption. The 'Email Test Result' section contains a table with 'Field Name' and 'Received' values, and a 'Description' and 'Status' at the bottom.

Field Name	Received
Value	from me-wanadoo.net (localhost [127.0.0.1]) by mwlnf3416.me.freemove.com (SMTP Server) with ESMTP id AC3751C0008F for <cast@stayinvisible.com>; Sun, 28 Oct 2007 21:58:38 +0100 (CET)
	from [91.109.109.20] (unknown [91.109.109.20]) by mwlnf3416.me.freemove.com (SMTP Server) with ESMTP id SDBA1C0008B for <cast@stayinvisible.com>; Sun, 28 Oct 2007 21:58:38 +0100 (CET)
Description	Trace of MTAs which a message has passed.
Status	RFC 2822: RFC 1123: 5.2.8.

The web site **www.stayinvisible.com** can test public proxies as well as tell you what your emails say about your system without your knowledge.



Hidden away in Firefox's configuration options are the controls for using a local proxy.

HANDY TIP

Google's translation service can help fool a poorly configured local proxy into allowing you to access blocked content. Simply enter the URL into the 'Translate a web page' box, select any language to English as the translation mode and press the Translate button. The page is then served from translate.google.com, which system administrators would need to add to the blocking rules to prevent it being used to bypass their proxy.

you'll see both the domain registration record and, more importantly, the IP address for the site. System administrators should check for traffic to this and other domain lookup sites.

Speaking of Google, it's not always necessary to visit blocked sites directly, thanks to Google's cached pages facility. After searching, instead of clicking the URL in the returned results, click on the Cached link. The information comes from Google's own database. However, the page may be out of date.

FOREIGN ACCESS

What sometimes infuriates fans of cult TV shows is that as one series ends in Australia, another begins in the US. The makers increasingly place the new episodes online for a short while so that people can catch up with those they've missed, but deliberately block any foreign fans from accessing the content.

Because the content is being made available online for free, the reasons for blocking it in certain territories are often less than clear-cut. If the makers plan to sell the program abroad, why put them online for free in the first place? Viewers

you to connect to it and relay your surfing activity back through itself. As long as the local web proxy doesn't spot any banned content being returned from PHPProxy, you should see the desired page.

System administrators can check for this technique by monitoring the sites you connect to. This is possible because commercial proxies allow for logging all requests; simply sort the data by user and web site. If someone is continually connecting to the same web site, it may be worth connecting yourself to see if they're using a private proxy.

If the local web proxy server is set up to block certain URLs, you may still be able to connect to blocked sites directly. To do this, all you need is the site's IP address. One method of obtaining it is to open a command line and issue the ping command with the domain name as its parameter. The IP address that comes back is the one to use.

Pinging www.google.com.au gives an IP of 72.14.235.104. Enter it into your browser as <http://72.14.235.104> and Google's site appears.

If the proxy server isn't configured to do a reverse DNS lookup so that it can check the domain name of the site associated with raw IP addresses, it may let the page request through.

Interestingly, it's also a lot faster in general to use IP addresses rather than domain names. This is because when you request a URL, your browser has to first request from your ISP's DNS server the IP address that corresponds to the domain. This takes time, during which the browser can go no further. If the DNS server is too busy servicing other requests, or has to request the address from another DNS server, the delay can sometimes be long enough to cause the browser to time out.

If you can't use the ping trick to get an IP address, try going to www.samspace.org and entering the domain name. Press 'Whois' and

Accessing the Tor public onion proxy is simple in Firefox, using the Torbutton add-on.



THE TECHNIQUES WE PRESENT HERE ARE THOSE THAT SYSTEM ADMINISTRATORS KNOW ABOUT AND ARE LEGAL

DO THIS...

TEST YOUR PROXY

There are plenty of reasons for hiding your IP address online, not least of which is so that the site can't track your web habits. A public proxy can help because many of them will also make your IP address anonymous. But how do you check that this happens?

One solution is the site www.stayinvisible.com. First, you can check that the proxy is available with the Proxy Checker page. Enter the IP address of the proxy server and the port number (usually 80), enter

the random verification code supplied, then press the submit button. The results will tell you if the proxy is up and accepting connections.

Once connected to a proxy (the method of connection will vary, so follow the proxy site's instructions), you can surf back to stayinvisible.com and select Test Your IP to see if your proxy has made your IP address anonymous. Press the 'Try to guess my IP' and the script will display the IP address (and the DNS name if there is one) it can see. Open a

Windows command line and enter the command 'ipconfig' to make sure that it's different to the one given to you by your ISP.

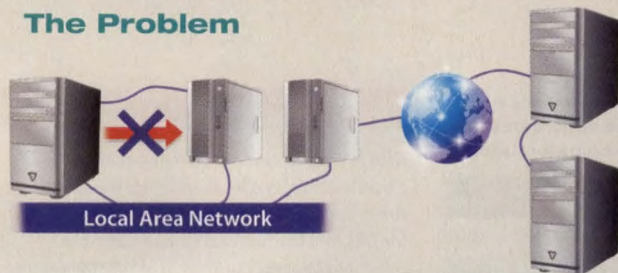
Usefully, you can also check the data your emails carry about your system in their headers. Go to the Test Your Email tool and send a message to the address provided with the code in the subject line. Wait a few minutes and click on the link provided. The resulting page gives a complete breakdown of each value carried in the headers.



DO THIS...

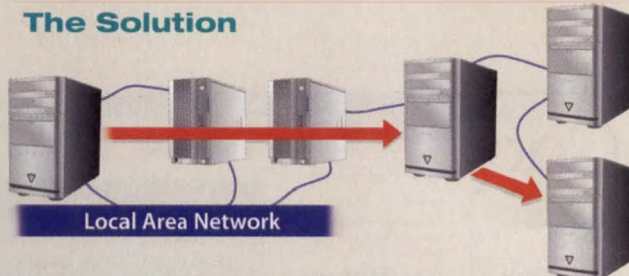
GO THE OTHER WAY AROUND

The Problem



With a web proxy installed on the local network, all surfing traffic goes through it instead of the local firewall. The firewall, in turn, might be configured to only allow outgoing connections to web sites that come through the proxy. A poorly configured proxy will block sites that should be accessible to you.

The Solution



If, instead of trying to access a blocked site, you access a public proxy that isn't blocked, it can act as a stepping stone. This can get around poorly configured local proxies. If the web site itself blocks you because of your location, a public proxy in a territory that is allowed to access it can overcome this restriction.

in territories that are allowed to see the content can easily download and mail it to their overseas friends, and the content regularly appears on torrent sites and YouTube.

One method of accessing content restricted by territory is to go via a public proxy server in a territory that does have access. Content owners, such as broadcasters, can block such proxies by IP address, but few bother. The solution seems either to block such sites, or not to tempt people with free content in the first place. The question remains, how do you find a public proxy?

Sites like www.tinyurl.com/2ubpb have long lists of public proxy servers, and there are good reasons for using these besides accessing content denied to you because of geography. Chief among these is that public proxies can be faster than accessing the original site because they accumulate data in a cache and, having less traffic than the original site, can serve it faster.

When using a public proxy, be careful not to send any sensitive data. This is because the proxy owner might be silently collecting email addresses to sell to spammers, for instance. If the site you want to connect to requires you to register, ensure that you set up a throwaway email account and use that.

THE ONION PROXY

A special form of public proxy is the onion proxy. A good example is the Tor network. An onion proxy network has layer after layer of random redirection between proxy servers, so that data entering at one point emerges again at an

unpredictable point, and in an unpredictable country. Connections to Tor are tunnelled over a special port, so the local proxy never sees the name of the site you're connecting to.

To use Tor, it's simplest to install the Torbutton extension in Firefox. From the Tools menu, select Add-ons. Click on the Get Extensions link and the Firefox extensions web site opens up. Enter 'torbutton' in the search box. Select Torbutton from the search results and press Install Now. The bottom right of the Firefox window border now has the words Tor Disabled in red. Click on this and it turns to the green Tor Enabled. All surfing requests will now go through the Tor network.

When switched on, Torbutton tunnels your web activity over ports 80, 443, 9001 and 9030. However, going through Tor is far slower than surfing directly. To prevent the use of Tor, system administrators block access to the relevant ports at the firewall.

HANDY TIP

System administrators on a budget can download the Squid web proxy from www.squid-cache.org. This is a fully featured open source web proxy that is even used by some ISPs. It offers a rich environment for access control and logging, but that's not all. Being a caching proxy, it saves frequently accessed pages and their various elements such as images and graphics. It then serves these resources locally, thereby speeding up access.

FORWARDING ADDRESS

Some organisations have a default blanket ban on web-based email. By only allowing mail to come into the organisation via the mail proxy and thus into your account on the local mail server, it can be checked for viruses and other malware. This can be very annoying, if you've registered with eBay using a web mail account and need to know if you've won.

To overcome these restrictions and get your email into your local account, you could forward your web-based email account to the local one. If this isn't possible due to proxy restrictions, you could set up a free, throwaway account with another provider that offers forwarding, and which your local proxy has not been configured to block. Forward your web-mail account to this throwaway account, and have it forward the mail to your local account.

There are several free email account providers, but you're going to have to do a little work to find which ones your local proxy will allow. Typing 'free email' into Google will get you a list, and looking into the sites should tell you which are blocked and which are allowed by the proxy.

There are as many methods of circumventing blanket restrictions on accessing content that can seem petty, or which block content that should be allowed, as there are methods of blocking it. If you do find that you can't access something you think you should have access to, you should talk to the person doing the blocking. You never know, it might just be a simple mistake. [BBC](http://www.bbc.co.uk)

SPOTLIGHT ON...

THE DIGITAL IRON CURTAIN

Don't get the idea that everyone who runs a public proxy server is an anarchist. In some countries, access to a public proxy can be the only way of bypassing state control of web content by hiding your intentions.

The Chinese government plays a subtle catch-up game with its own people. As they find new ways around what's becoming known as the 'Great Firewall of China', so government technicians have to find ways of stopping them.

It's a race that shows no signs of being won any time soon.

Maintaining a totalitarian state is becoming an increasing headache for some regimes, as users want to know the truth and not just what their government tells them. Walk into a Shanghai internet cafe and type in <http://news.com.au> and you're likely to receive a message saying the site is banned. You're also likely to have your activities logged and perhaps even be on CCTV. Writing a blog

critical of the government can brand you as a dissident, which can carry very heavy penalties. Public proxies that keep your identity anonymous are vital.

Even in other parts of the world, web access is a deeply contentious issue that can and does land some people in trouble. In Saudi Arabia, for instance, access to some web sites selling swimwear is banned, and writing a blog critical of the government has landed people in jail.

Unlock Vista's secrets

Get to grips with the new OS's lesser-known features and you'll soon forget about Windows XP, says *John Brandon*.

REQUIREMENTS

● WINDOWS VISTA

We'll give you eight tips on how to get the most out of Microsoft's latest operating system.

Get to know how Vista works and you'll soon get more out of your computing. You just need to get to grips with its new features and you'll save time and processing power. Here we look at eight essential Vista technologies — master them and you'll get the best from your new OS.

1. READYBOOST

Use a USB 2.0 thumb drive as a performance-boosting cache. After lab testing the system we found it works, though there are caveats. Adding more RAM is always going to be the best upgrade but, if you've a spare thumb drive around, use it. We found that there is little to be gained from using a drive with over 2GB of space.

2. INTERNET EXPLORER 7

This runs almost two times faster in Windows Vista than IE6 ran in Windows XP Home. What takes nearly 10 seconds to fully load in IE6 now takes just a few seconds in IE7, thanks to much more streamlined HTML and ActiveX processing. It begs the question: why did Microsoft wait years to update IE?

3. PHISHING FILTER

Windows Vista provides a built-in phishing filter that warns you — in Internet Explorer 7 — when

you have visited a site that is known as a 'spoof' site of the legitimate destination. Microsoft will update the phishing filter — like the junk mail filter — through Windows. Use it.

4. TCP WINDOWS SCALING

TCP Window Scaling causes Vista to 'advertise' or allow a larger memory envelope for internet traffic — higher than the 65K default used in previous operating systems. Some domain controllers and routers have a hard time with TCP Window Scaling. The best solution is to upgrade the firmware (for the router) or obtain a new driver (for the network card). Or you can disable TCP Window Scaling by typing this line in the command line prompt: 'netsh interface tcp set global autotuninglevel=disabled'.

5. SUPERFETCH

Superfetch caching can speed up system performance if you've got 2GB of RAM. Anything under (even with a Readyboost drive compensating) and your system may slow down. If you can't afford more RAM, disable Superfetch by setting a value of zero in the following Registry entry: 'HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management\PrefetchParameters\EnableSuperfetch'.

6. TURN AERO OFF

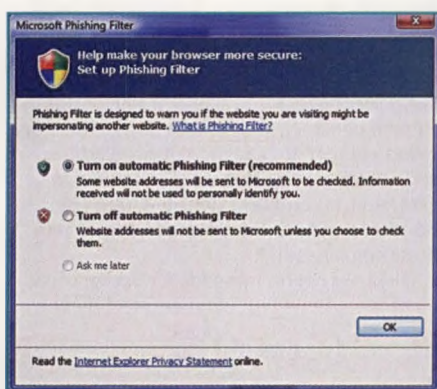
Aero looks pretty, but if your PC or your graphics card isn't up to the job, your machine may run slowly. To turn the system off, right-click on your desktop and then select Personalise. Now click on Windows Colour and Appearance followed by 'Open classic appearance properties' for more colour options. From the list choose Windows Vista Basic.

7. PREVENTING MALWARE INFECTIONS

In the 64-bit version of Windows Vista, Microsoft is trying something new: the kernel has patch protection, which keeps it from running any undocumented or unsupported kernel hooks. The two main benefits are in speed and in the obvious security reassurance you'll get.

8. INSTANT SEARCH

When you type a phrase in the Start menu search, or from just about any folder search, Vista starts the search immediately. It searches the full text of files and file names, email, internet history files, PDF, contacts, and rich media files such as Windows Media Player tracks. **FTIC**



Vista's phishing filter is designed to warn you if a web site you're visiting is a fake.

Fast searching in Vista means you only have to type just a few characters to see the results. You can search for email, rich media files and more.





Create a Firefox extension

Jon Thompson shows you how to write and package your own extension for Firefox.

REQUIREMENTS

● FIREFOX 2.0

We'll use this to test our extension.

● WINZIP

For opening Java archives and packaging the finished extension.

● NOTEPAD

Or another text editor, to create the files for our extension.

Developing and distributing in Mozilla's open source Firefox browser 2.0 is easy. JavaScript skills are required for programming functional extensions, but the steps involved in creating a basic extension are still the same, and act as a starting point for complex projects. We'll look at those steps and create an extension that adds new options to the tools menu; selecting it will cause a pop up to appear. We'll also package extensions, so you can distribute them to others.

CHROME PLATED GECKO

At the heart of Firefox lies the Gecko layout engine. Its job is to display web pages, but that's not all. Gecko also creates and controls all the elements of the user interface (known as widgets). To do this, Gecko also reads files in a format called XUL. For instance, when you run Firefox, Gecko first loads an XUL file called `browser.xul`. This tells it what features the browser should have and also where to find the JavaScript that runs behind each button, menu option, and so on.

To demonstrate, open Firefox and enter: `'chrome://browser/content/browser.xul'`. The browser will appear inside Firefox with installed extensions. Hit the home button or enter a URL, and you'll see that it's a browser running within a browser. To remove it, press the back button on the outer browser. The files that go to make up the user interface and its functionality are known collectively as Chrome. In loading `browser.xul`, we use 'chrome' instead of the more usual 'HTTP' in the URL. This part of the URL is called the Universal Resource Indicator (URI). It indicates to the browser the type of resource being loaded, and therefore how to handle it.

A URL of 'chrome' tells the browser to find the file in the registry of Chrome interface files maintained by Gecko as part of the installation, and that it'll contain XUL. The files themselves could be anywhere, and are either supplied with

the browser or are part of the extensions you install. `Browser.xul`, for instance, lives in a Java archive, buried within the Firefox installation directory structure. To show the steps involved in creating a new extension, we're going to create a pop-up that will say 'Hello world!'

Gecko calls the files we add to extend the browser's functionality 'overlays', and it has a mechanism to allow us to add them. First, we need to examine `browser.xul` to find the unique ID of the widget we want to overlay with our extra option. We then write the extension and specify this ID as our desired overlay point. Locate the Firefox installation directory under Program Files. `Browser.xul` is in the chrome subdirectory. It's stored in the Java archive file `browser.jar`. You can open this and see `browser.xul` using WinZip or a similar program. Right-click on the Java archive, select 'Open with...' and select your zip program. In WinZip, open the `browser.xul` file by right-clicking it and selecting 'Open...', or drag it into a Notepad.

Look at the contents of `browser.xul` for the widget definition 'menu_ToolsPopup'. This is the widget that has the Tools drop-down menu options. We need to create a directory structure to both hold our extension, and which Gecko will understand, by setting up a dedicated development directory. This can be anywhere, but we'll create it as `C:\extensions` here. Inside this, we need to create a subdirectory to hold the different files and directories. Our extension is called 'my_extension'.

Inside this subdirectory, we need to create just one subdirectory, called 'chrome'. Inside the chrome directory, also create a further directory called 'content' to hold the XUL overlay file and a JavaScript file that will constitute our extension. In complex extensions, there can be other standard directories too, but for this, these aren't needed.

Next, we need some code for Gecko to load

DO THIS...

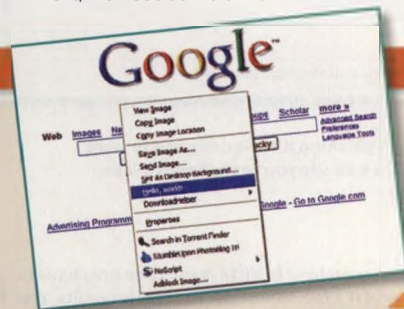
EXTEND THE CONTEXT MENU

The context menu appears when you right-click on the main browser window where web pages appear. We can overlay our 'Hello world!' menu option by adding this to `my_extension.xul`:

```
<popup id="contentAreaContext Menu">
<menuitem id="helloworld" label="Hello
world!" accesskey="H" insertafter="context-
stop" oncommand="hello()"/>
</popup>
```

This tells Gecko to add our menu item, 'helloworld', to the `contentAreaContextMenu`. It's the widget that has the context menu options. The insert after 'context-stop' tells it to overlay the code after the stop option.

Proceed to re-package and reinstall the extension, and then press the right mouse button; the menu that pops up should contain our option. Select it and it should pop-up the box as usual.



Adding our pop-up to the context menus is a matter of finding a widget to overlay.

and execute. Enter the below into a text file and save it under the name 'my_extension.xul' in the content subdirectory:

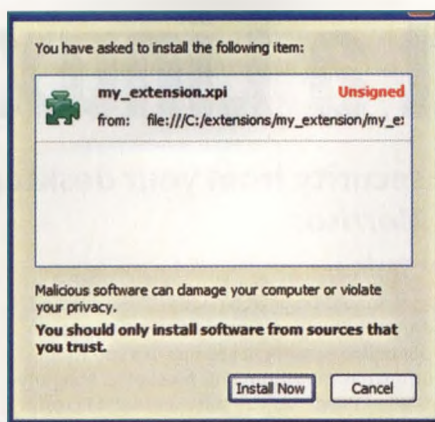
```
<?xml version="1.0"?>
<overlay id="my_extension" xmlns="http://
www.mozilla.org/keymaster/gatekeeper/there.
is.only.xul">
<script type="application/xjavascript"
src="chrome://my_extension/content/
helloworld.js">
</script>
<menupopup id="menu_ToolsPopup">
<menuitem insertafter="devToolsSeparator"
label="Hello world!" accesskey="H"
oncommand="hello();" />
</menupopup>
</overlay>
```

In the above code, we first name our overlay ('my_extension'), then specify a second file called helloworld.js, which we'll come to. Next, we specify the widget ('menu_ToolsPopup') to which we want to overlay our own menu option. For this, we add a new 'menuitem' called 'Hello world!', with a shortcut key of 'H'. We'll call the function hello(). Create a file called 'helloworld.js' in the content directory and enter this text:

```
function hello(){
alert("Hello, world!");
}
```

To test our extension, we need to tell Gecko it exists. First, we need to create a file in the 'my_extension' directory called 'install.rdf'. This contains information about our extension. Enter this text into this file and save it:

```
<?xml version="1.0"?>
<RDF xmlns="http://www3.org/1999/02/22-
rdf-syntax-ns#" xmlns:em="http://www.mozilla.
org/2004/em-rdf#">
<Description about="urn:mozilla:install-
manifest">
<em:id>jon@apcmag.com</em:id>
```



Double-clicking on the packaged extension should install it.

The first line tells Gecko to add XUL content to the Chrome registry, which it will find in the chrome/content/subdirectory, and which is called 'my_extension'. The second line tells Gecko to overlay the browser.xul file with the my_extension.xul file. We need to tell Gecko to read in the extension when Firefox starts. First, we need to find our Firefox profile within the Windows Application Data directory structure: click Start on the Windows taskbar, select 'Run...' and enter '%APPDATA%'. Press Return and an Explorer window opens, displaying the directory.

Open the Mozilla directory and navigate down through the Firefox subdirectory into Profiles, where there's a directory with an alphanumeric name ending with the extension 'default'. Open this and descend into the extensions subdirectory it contains. This is where Firefox keeps your extensions and where we can tell Gecko to load our extension from C:\extensions\my_extension. Create a file named for the unique identifier we entered in the install.rdf file. In this case, jon@apcmag.com. Create a file with this name in this directory:

C:\extensions\my_extension

Now close Firefox and restart it. Select 'Hello world!' in the tools menu and Gecko should run the hello() function in helloworld.js, which pops up a small window. To package up our extension for installation, zip up the contents of the my_extension directory and subdirectories, so that the install.rdf and chrome.manifest files are archived at the top. Finally, change the zip file's extension to .xpi.

To install the package, remove jon@apcmag.com from the profiles directory so that Firefox forgets about our development directory. Close Firefox, double-click on the .xpi file, and Windows will ask you to select a program to open it with. Select Firefox and it will appear with the extension installation pop up. Press the Install Now button then restart Firefox. If you click on the tools menu in Firefox and select the add-ons option, you'll also see options to disable and uninstall it. [ETC](#)

```
<em:version>1.0</em:version>
<em:type>2</em:type>
<em:targetApplication>
<Description>
<em:id>{ec8030f7-c20a-464f-9b0e-
13a3a9e97384}</em:id> <em:minVersion>1.5</
em:minVersion>
<em:maxVersion>2.0.0.*</em:maxVersion>
</Description>
</em:targetApplication>
<em:name>My Extension</em:name>
<em:description>My first extension</em:
description>
<em:creator>Jon Thompson</em:creator>
<em:homepageURL>http://www.apcmag.com/</
em:homepageURL>
</Description>
</RDF>
```

The email address is the unique identifier of our extension. Create a file called 'chrome.manifest' in the my_extension directory and enter:

```
content my_extension chrome/content/
overlay chrome://browser/content/browser.xul
chrome://my_extension/content/my_extension.
xul
```

SPOTLIGHT ON... PROGRAMMING FIREFOX

While free tutorials and even trial-and-error are fine for familiarising yourself with the basics, if you are serious about writing extensions, it's important to have an authoritative reference work to hand.

One such resource is *Programming Firefox* published by O'Reilly. It forms both a programmer's reference guide and an in-depth tutorial on adding functionality not only to Firefox but also to the Thunderbird email client (and for creating standalone XUL web applications).

At just over 500 pages, it gives plenty of fully worked examples to demonstrate the techniques involved. It also contains a complete reference to XUL widget functions, which is perfect when you're learning by picking through the files bundled with your favourite extensions.

It's US\$60, but if you're serious about writing extensions or standalone XUL applications, *Programming Firefox* is a great resource.

Programming Firefox is a great reference book if you want to develop Firefox extensions.





Construct a Linux Firewall

Move the burden of network security from your desktop or router to a standalone Linux machine, says *Graham Morrison*.

REQUIREMENTS

• A LOW-SPEC LINUX MACHINE OR DESKTOP

You'll need this to use as the firewall. If you already have a working Linux desktop, this can be used instead, but it won't be quite as flexible as a standalone firewall. For a standalone machine, you will need a network device for each network that you want to secure.

Several years ago, you couldn't open a magazine or web page without reading some talk of how essential a firewall was to your online security; it seemed like you were surfing naked without one. Most of us obligingly installed the requisite software, and Microsoft included one by default with its second XP service pack. As a result, we've all spent the last couple of years enduring upgrade reminders and convoluted port/protocol permutations in order to simply play an online game. And when something didn't work, it was easy to blame the firewall.

However, firewalls are essential and you'd be foolish going online without one, but there is a better way to handle their management and configuration, and that's to move this essential task to a dedicated machine. The big advantage with this approach is that if you run more than a single machine on your local network, you won't need to configure more than one firewall. It also means that your local network isn't hampered by overzealous packet filtering, while your computers won't suffer from any performance degradation as a result of an extra process.

WIRELESS CORDON

There's another good reason to use a separate machine for your firewall, and that's to secure a wireless network. You may want to allow people to use your wireless network to access the internet, but not allow them to access your local network, for instance. The average wireless router will only be able to secure one connection — usually the connection to the internet, and

HANDY TIP

System logs aren't the most exciting things in the world, but they can save you a world of heartache. An attack doesn't usually come out of the blue; it's normally the result of several days of chipping away at your server's security. If a hacker has been trying to get access to your system, the first place to look is your logs. SmoothWall logs everything, and you can see what's being used and what's being blocked. If something isn't right, you'll be able to see it and take action immediately.

both the Ethernet and wireless networks that sit behind the firewall are equally trusted. This will leave services running on your LAN that are wide open to anyone connected to the same wireless network. Folder and printer sharing are the main culprits, but it could be anything you run behind the firewall on your local network.

To solve this problem you need a flexible firewall configuration, and the vast majority of router and software firewalls fall short, which is why you're better off using a separate machine for the purpose. You can use any machine you might have — firewalls aren't computationally intensive. And, with Linux providing the OS, the machine will be both free and secure.

The essential task of network packet filtering is done at the lowest possible level in Linux — within the kernel, using a framework called 'netfilter' and its companion user-space tool

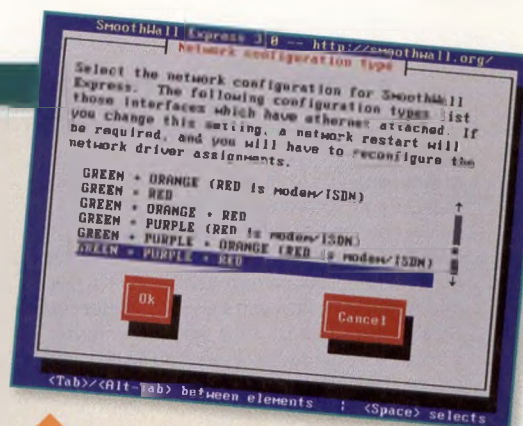
SmoothWall is accessed through a secure web interface and is relatively easy to use. It also means you can manage your network from anywhere.



SPOTLIGHT ON... DEMILITARISED ZONES

Demilitarised Zones (DMZ for short) are vital to the security of many medium-sized networks, but they're often misunderstood. They function just like the DMZs in the military world — a zone where no activity is permitted. In the computer network sense, this means that connections from outside the zone aren't allowed to bridge the divide and access internal networks directly. The only servers these external machines can connect to are those within the DMZ. The most common example of this is an email server. From within a DMZ, it can send email out to the wider internet and to the local LAN. But because it exists within the DMZ, if it becomes compromised from the internet, potential damage is limited. It's for this reason that a mail server within a DMZ should only be responsible for mail delivery,

and not actually store email. If it's used for storage, a hacked server could be a gold mine of information to any hacker. It's therefore much better to put the storage within the LAN, and use the mail server within the DMZ for transport. Web servers are often placed within the DMZ for the same reason. Both networks can read the data on the web server, but neither network can bridge the divide between the internet and LAN. To create a configuration like this using Linux as a firewall, you would need three network connections: one for the internet; another for the DMZ; and a third for the LAN. A firewall like SmoothWall could then be configured to manage these connections and ensure that a policy is used that will keep the open policies of the DMZ isolated from the locked-down LAN.



With SmoothWall, each network device is given its own colour, and security presets let you set-up something like a DMZ on your network.



SmoothWall uses a colour code for each type of network and provides presets for each configuration.

If you don't want to use a whole machine for the firewall, use a Linux desktop solution like Firestarter.

called 'iptables'. It's this low level of implementation that makes it so secure, as it can't be hacked without altering the kernel. Every Linux distribution includes both netfilter and iptables, and, as a result, any distribution can make a perfectly secure firewall. Your first step therefore should be choosing the distribution that you want to use. This is entirely dependent on your Linux experience and how seriously you want to approach the problem.

DISTRIBUTION CHOICES

For normal use you can easily use any popular desktop distribution such as Ubuntu. If you currently run a Linux machine, for example, you could easily continue using your desktop distribution as a firewall without any degradation in Linux performance. You might be surprised to find that distributions like Ubuntu don't actually include any activated firewall by default. They can be used perfectly safely without one. This is because, unlike Windows, Ubuntu doesn't run any network-

facing processes that are open to the internet. This means that online miscreants can't lever their way into your system.

No internet-facing processes means no need for a firewall. If, however, you were running an FTP server on your local network (FTP is a service that many security experts consider insecure), you would need to use a firewall to ensure the port a client uses to access FTP (TCP port 21 in this case) can't be accessed from outside the network. If you stick with the desktop Linux route, then you need to install an application called Firestarter. This uses a wizard to step you through the network configuration and features an easy GUI for adding and changing the setup.

However, if you're serious about installing a Linux firewall, and you're happy to dedicate an

HANDY TIP

The latest version of SmoothWall can be found at www.smoothwall.org. You don't need any Linux experience to be able to use it and, unlike the majority of open source projects, SmoothWall is excellently documented. We highly recommend you download the installation PDF that's also available on the site and use this to fine-tune your configuration. It's a fantastic read and will get you up to speed in no time. The SmoothWall project can do this because it's also a commercial product.

entire machine to the process, a distribution that's been built to provide a dedicated firewall is the best solution, and the one to use is called SmoothWall (you'll find a copy of SmoothWall Express on this month's cover DVD). The only special consideration for this machine is that it has a device for each network you want to secure. This means a wireless card for your wireless network, an Ethernet card for the LAN and another connection for the internet — this could be another Ethernet card or something like ADSL, for instance. You only need the bare minimum amount of hard disk space, as SmoothWall is only around 60MB and will easily fit into less than 1GB of space. If you want to secure a wireless network, this will need to use the Linux firewall as a gateway, and be connected to a spare Ethernet port on your server.

SMOOTHWALL INSTALLATION

The first step is to boot your machine with the SmoothWall disc inserted. The installation routine is only short, but SmoothWall will take over your machine completely, deleting any disk partitions and creating its own. This obviously



THIS MEANS THAT ONLINE MISCREANTS CAN'T LEVER THEIR WAY INTO YOUR SYSTEM

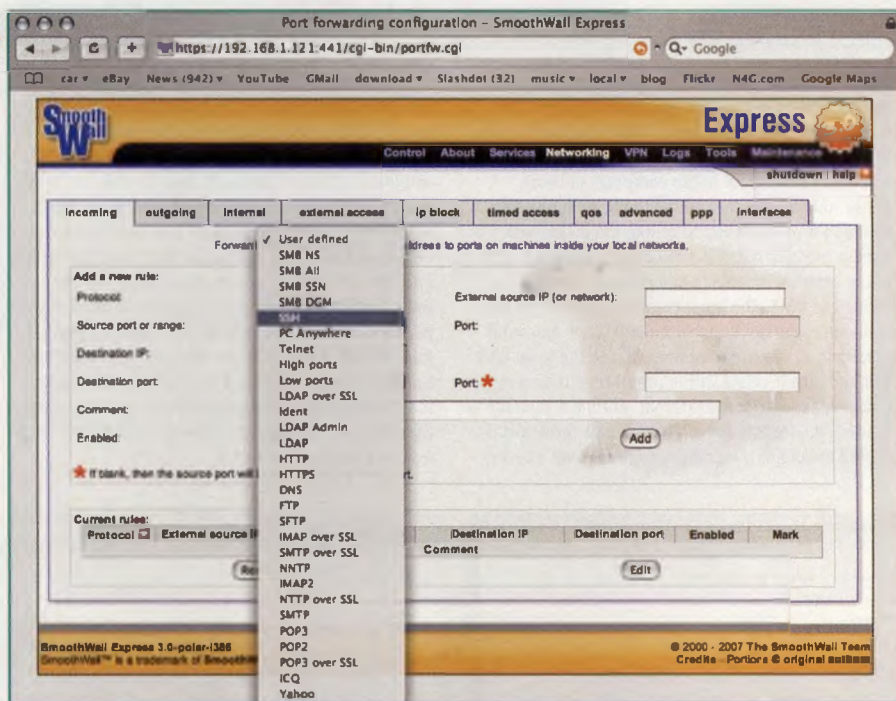


SmoothWall can be used just like any other firewall. Open ports for the services you want access to, and keep the ones you don't blocked.

means you will lose any data stored on the disk, so make sure you know what you're doing before you start. After the partitioning has completed, SmoothWall will install itself on the main partition, after which it will ask you a few questions about how you want to configure your firewall. After asking for the domain name you want to use (this doesn't matter on a LAN), you will be asked about the default security policy you select. Most firewalls, such as earlier versions of SmoothWall, allow all outward connections. However, you can curtail any machines on your network that may be infected with a virus, as well as specific application activity, by disabling this feature. SmoothWall suggests a 'half-open' policy, where only known troublemaking ports are blocked. Whichever you choose, you can always fine-tune the policy once the installation is complete.

The next step is to consider your network configuration type and define which ports are connected to each network. This is done using a colour code for each connection. Green is for a trusted network — most likely to be your LAN. Orange is for a demilitarised zone (if your network has one). Purple is for a semi-trusted network and would suit the wireless situation we explained earlier. Red is for the untrusted network — your connection to the internet. You need to choose a scheme within SmoothWall that matches your current network configuration. For example, if you need a private LAN and a shared wireless network connected to the internet, you will need to choose the 'Green | Purple | Red' configuration. After selecting the type, you will then need to select the 'Drivers and Card assignments' option to apply a colour to each of your networking devices according to the above rules. Finally, assign an IP address to each device and enter the details for your gateway and DNS configuration.

Before closing the SmoothWall installer, you will also be asked if you want to configure a web proxy (a good idea if you want to block certain sites) and your ADSL connection, if this is contained within the firewall machine. If you've made a mistake, you can always log in to the



WHATEVER YOU CHOOSE, YOU CAN ALWAYS FINE-TUNE THE POLICY ONCE THE INSTALLATION IS COMPLETE

SmoothWall server using your root password and run the SETUP application again. After a quick reboot, your Linux machine is now acting as the perfect firewall.

SmoothWall is designed to be managed through a web interface so that you can hide the box under the stairs. On your LAN, point a web browser to the IP address you assigned to the green network connection, and use the https protocol and port 441 for added security (<https://192.168.1.121:441>, for instance). You will be asked for a username and password, the former being 'admin' and the latter whatever you used in the setup procedure.

If you've used a router firewall before, then the SmoothWall interface will feel familiar, even

if it is a lot more powerful. The main functions are selected from the eight buttons on the top bar of the window. For instance, Control is used for starting and stopping the server. However, most of the useful functionality is hidden behind the Networking button. Selecting this will open a tabbed view with 10 further pages. You will probably spend most time with the Incoming and Outgoing pages, as these let you open and forward ports for services you want to let out or into your network — much like the Windows firewall. Just select the protocol you want to switch on from the drop-down list (add any that are missing using the services button) and set the machine you want the service forwarded to. Enabled machines are listed in the Current Routes section at the bottom of the page.

Other useful options in the Networking pages include the Timed Access function, so that you can allow YouTube access at lunchtime only, for example, or restrict how your children access the internet. The 'QOS' page, meanwhile, lets you throttle certain services so that you can reduce the speed of FTP transfers, or even slow down BitTorrent if you need to, and instead free up the network for mail and web browsing. These are features you will seldom find on routers or commercial firewalls, and you will find that running them on a separate Linux machine makes network management a considerably easier task.

DO THIS...

FIREWALL UBUNTU

One of the most popular Linux distributions avoids installing any network services that could be a security risk, removing the need for a firewall. But if you want to use your Ubuntu machine as a file or web server, adding a firewall makes sense. If you search for 'firewall' in Ubuntu's package manager, the best we've come across is Firestarter, which is launched from the Internet menu. During setup you need to ensure it detects the device that you use to connect to the net. You can also allow net connection sharing with this device and other

computers connected to your machine. Firestarter is a front end to the network-filtering functionality built into the Linux kernel, so tools like Firestarter configure the global configuration for your machine, rather than running as isolated app. Other configs you have will be swept away with each new firewall front end you try. Your machine is also stuck with the firewall config, whether tools like Firestarter are running or not. Still, you can also use a running instance of Firestarter to alter the configuration, as well as clear the firewall if you wish.



Design apps in Silverlight

Paul Hudson shows you how to draw simple shapes
— let Expression Blend do it for you!

REQUIREMENTS

● MICROSOFT EXPRESSION BLEND 2

Handle the graphics and interface design from inside Microsoft's snappy new design program.

● SILVERLIGHT SDK

Put the power behind the pretty colours with the official SDK, freely downloadable from www.silverlight.net.

IN THIS SERIES

● Part 1 — January '08

An introduction to Silverlight, including a simple project to demonstrate the basics.

● Part 2 — March '08

We'll be integrating Expression Blend to add more powerful animations and design.

The .NET framework has re-invigorated the Windows platform for development, though you could be forgiven for getting a little bored in recent months, because a lot of the latest work out of Laboratory Redmond has been targeted at Windows Vista. However, in the next 20 minutes we think your interest will be reawakened, if not wowed, by what .NET has to offer. To achieve this we're going to be bringing Microsoft Expression Blend into the mix so that you can design your canvas — as well as any animations and effects — just by dragging and dropping vectors.

Expression Blend is only one part of a larger suite, known as Expression Studio, which also includes Expression Design (taking on Adobe Illustrator), Expression Web (taking on Adobe Dreamweaver and replacing Microsoft FrontPage) and a few other minor bits and pieces. Don't be fooled by the fact that the three main products all come under the Expression brand: they are vastly different tools, and you'll probably only want to use one of them. Blend's role in the suite is to apply XAML to user interfaces, which means the hand-hacking of XAML we indulged in in Part 1 is no longer required: XAML can do it all for us!

To follow this tutorial, you will need to have the latest preview of Microsoft Expression Blend 2 installed as well as the Silverlight SDK available from www.silverlight.net. If you use the trial version of Blend 1, you won't have the same project functionality available to you, so we'd

HANDY TIP

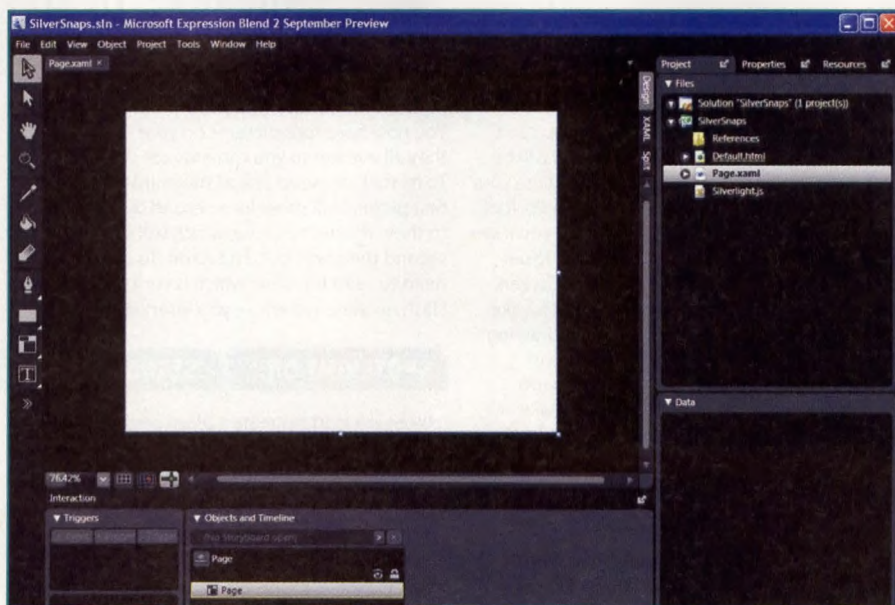
In this tutorial we added just one timeline, which was activated when the canvas was clicked. However, the point is that each of your timelines are named, so you can refer to them in code and choose to play them back in any order you want. To add more timelines, just repeat the procedure, but make sure you give your timelines useful names, otherwise you'll have to play them back each time you want to remember what they do.

recommend sticking with the Blend 2 Preview. If you also happen to have some version of Visual Studio installed, that's even better for you, but it's not required for this issue's tutorial.

FIRST STEPS IN BLEND

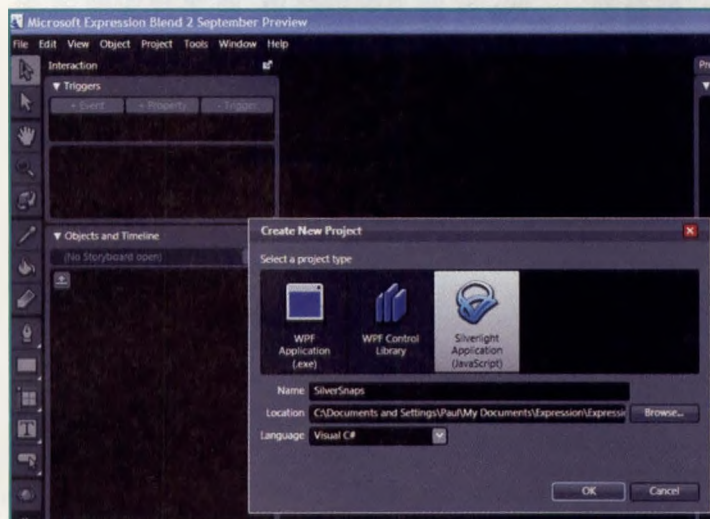
If you ever need confirmation that Microsoft has totally lost the plot when it comes to user-interface design, Expression Blend is it. If you think of the long years Microsoft spent building up its Win32 look and feel, you probably felt it was about time for a big change and were eager to see the look and feel of Vista. Of course, the look and feel of Vista soon becomes annoying when the rest of the operating system runs at snail speed, but at least it looks moderately fresh. And the new Office 2007 interface, with ribbons and chunky buttons, is quite attractive once you get used to it.

A blank canvas in animation mode — notice that the Object and Timelines pane has moved to the bottom of the screen.





Drop at least four pictures onto your canvas so you see them all easily. These aren't embedded inside the XAML, so you can change them later.



Expression Blend will let you create projects for C#, Visual Basic or Silverlight/JavaScript.

However, Expression Blend seems to be in a user-interface world of its own: the interface is flat (there's no careful bevelling to make it look 3D) and is primarily made up of a seemingly endless supply of shades of grey. This has the advantage that Blend's user interface doesn't distract your eyes from the design of your own user interface, but on the flip side it also makes the whole program feel a little drab.

If Expression Design's closest competitor is Adobe Illustrator, then Expression Blend's is Adobe Flash, and Blend incorporates Silverlight support to make your artistic vision transfer smoothly to the internet. To get started, click the Projects tab from the first run window, then click New Project. In the window that appears, choose Silverlight Application (JavaScript) then give it the name SilverSnaps and click OK. Don't worry that the language is set to Visual C# — this is a preview of Blend 2, after all, so you might spot a few other inconsistencies!

When you click OK your new program will be created, and your canvas will probably use up a lot of the space on your screen. If you can't see the edges of your canvas (the canvas will be white, and the edges will be grey), make sure your screen is maximised. If that still doesn't help, look to the left of the horizontal scrollbar and you'll see a combo box for the zoom — it's set to 100 per cent by default, so change it to be Fit To Screen.

You're now in a program that works a lot like Flash: along the far left is your choice of drawing tools, then you have Objects, Timelines and Triggers (also on the left), and Properties (on the right). The program we're going to make will display pictures like a photo album, so you need to round up four or so JPEG pictures from your computer that you want to use in your slideshow.

Once you have your four pictures, click Project > Add Existing Item, then add all four to the project. These will appear in the right-hand pane (it should have the Project tab selected), and you

should be able to drag and drop all four onto the blank canvas.

Now comes some deft manoeuvring. When you added those pictures to the canvas, they should have all appeared in the left pane as [Image] in the Objects and Timelines box — you need to click on each one of them in turn and resize them so they fill the canvas space. This is tricky because they're layered on top of each other in the order they appear in the Objects pane: images at the top are placed first, meaning that they appear below other pictures. Don't worry, though — if you select an object using that pane you can resize it even if you can't see it.



BLEND INCORPORATES SILVERLIGHT SUPPORT TO MAKE YOUR ARTISTIC VISION TRANSFER SMOOTHLY TO THE INTERNET

ANIMATION AND TIMELINES

You now have four pictures on your canvas, but they all overlap so you can only see one at a time. To fix that, we need to add some animation: the first picture will show for a second then fade out to show the next picture, which will show for a second then fade out, and so on. To do all this we need to use a timeline, which is very similar to the Flash timeline system — you insert keyframes

where you set positions and properties of objects, then Blend automatically creates smooth animation between those keyframes for you (known as 'tweening' in Flash).

First, go to Window > Animation Workspace — this re-arranges the user interface so the Objects and Timelines pane stretches across the bottom, which is logical given that its timelines flow from left to right. You should probably also click the Design tab above the right-hand scrollbar for your canvas, as that hides the in-line XAML display and gives you more room to work. To add a timeline you need to look for the select box that says 'No storyboard open' at the top of the Objects and Timelines pane.

When you click the small arrow on the right of that select box, a new window will appear — click the '+' sign in that window and you'll create a new storyboard, which in this situation is just a timeline of actions. You will be asked to give your timeline a name, but leave it with the default name of 'Timeline1' — you'll see why later.

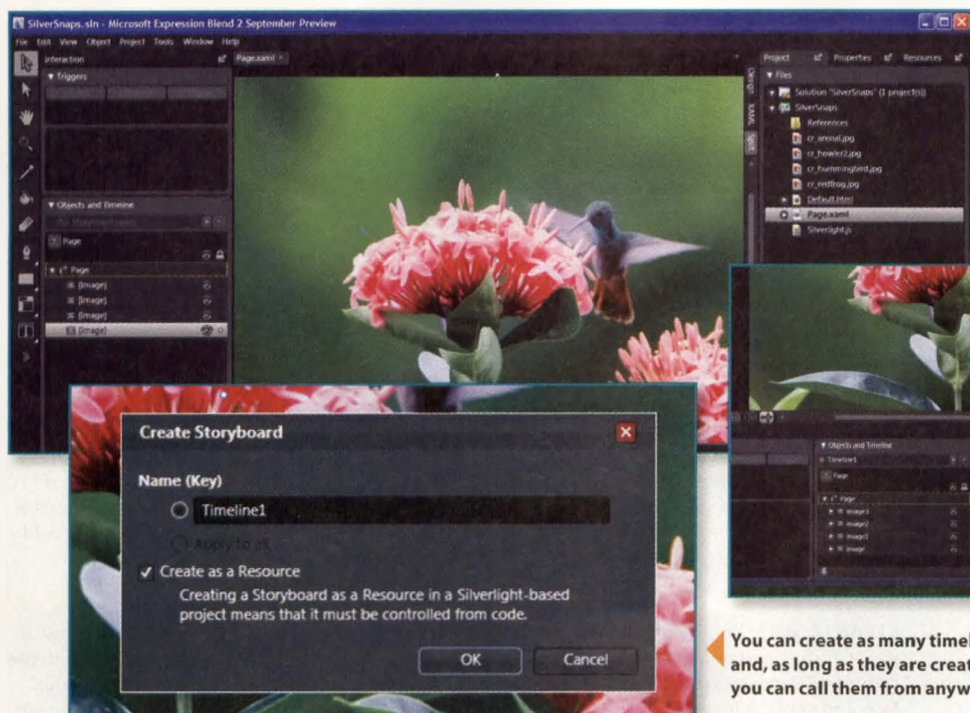
When you click OK to create the timeline, two important things will change: the canvas view will

SPOTLIGHT ON...

STANDALONE BLEND APPS

When you start to create a Blend project, you'll see the first option on the list is 'WPF Application (.exe)', which is arguably the coolest thing Blend has on offer. You see, Blend is a user-interface designer as well as a simplified vector-art application — this means that when you create a WPF program you get the full WPF user-interface

toolkit available to you, including buttons, combo boxes, sliders, menus and more. As these are WPF-drawn (DirectX-based) rather than Windows Forms (GDI-based), they are completely scalable: you can zoom into a slider and it appears twice as large, with beautiful rounded edges and smooth gradients. Really, it has to be seen to be believed!



Before making your timeline, resize each photo so it covers the full canvas. Use the Objects and Timelines pane to select hidden pictures.

Your final timeline should look like this: each picture is visible for one second, then fades out.



You can create as many timelines as you want, and, as long as they are created as resources, you can call them from anywhere in your code.

change to recording mode (look for the red border and the text at the top saying 'Timeline recording is on'), and a timeline will appear next to each of your objects in the Objects and Timelines pane.

What you need to do now is to create the timelines for each of the pictures. First, drag the yellow time arrow marker to the one-second position, select your top image (this will be the last image in the list), then click the small '+' button just above and to the left of the arrow you just dragged — that adds a new keyframe for that object. Now drag the time marker to the two-second mark and add another keyframe, meaning that we now have our three positions: from zero to one seconds nothing happens (the first picture shows for a second), now from one to two seconds we can make it fade out.

To do that, make sure the time marker is on two seconds, then click your image and go to the Properties tab at the top right of the window. Any properties you change while in recording mode will be animated in your timeline, so look down the list of available properties until you see Opacity 100%, and change that to be 0%, or Invisible.

Now right-click on the keyframe at two seconds and choose Ease In > 100%, so that the opacity starts fast then slows down. If you have everything right so far, you should be able to click the Play button on the timeline to see the first picture fade away to reveal the picture behind it. The next step is to repeat the above for each picture you have, always leaving the one-second gap so that each picture has time for itself. To take the second picture as an example, you should place your keyframes at three and four seconds

(make sure you select the second picture first!), so that it's visible for the first three seconds (two of which are behind the first picture) before fading out. When the final picture fades out, you should be left with the plain canvas.

MAKING IT WORK

Press F5 to build your application and run it in your browser. You'll soon notice that nothing actually happens — you'll see your first picture, but it won't fade away to reveal the others. The reason for this is that each project has multiple timelines that exist independently of each other. What you're seeing here is the default, 'no storyboard open' view that you saw earlier, and there's no animation in there.

Right, do you see this line?: `// this.control.content.findName("Timeline1").Begin();` What you need to do is remove the `//` at the start, then save the file. And, er, that's it! No, really — that line is all the 'coding' you need to do!

Now return to Blend and press F5 again to build the solution and load your browser to preview the output. As before, you'll see your static picture at first, but now you can click on it to kick off the timeline you have created. That JavaScript code behind the file works in the same way as the one we looked at hand coding last tutorial — Blend won't monkey with it, because it's more interested in exporting the XAML correctly. From here, your next steps are to try assigning smarter names to your images (Image1,



WHAT YOU NEED TO DO NOW IS TO CREATE THE TIMELINES FOR EACH OF THE PICTURES

To make your timeline play we need to leave Blend for a moment and delve into JavaScript just a little — and we really mean just a little. To be embarrassed at how much code this actually takes, go to the Project tab on the right of your Blend window, then click the small arrow next to Page.xaml to reveal Page.xaml.js. As with the code from our last Silverlight tutorial in APC January, this is the 'code behind' file for Page.xaml, which means it contains all the code required to make that XAML canvas come to life. Double-click on Page.xaml.js to open it up in Notepad and get ready to get your hands dirty with some hardcore coding!

Image2, and so on gets confusing very fast), so you can try writing more code to access them. You could also try experimenting with some of the other properties so you can learn what Blend can and can't tween for you — although usually things just work.

So, that's the power of Silverlight and Blend, but there's a lot more that Blend can do outside of Silverlight. Plus, Silverlight 1.1 promises to tighten the Silverlight/Blend/Visual Studio integration even more, which means we can forget about JavaScript, move to C# and finally wrench back control of interactive web sites from designers. [ETTC](#)



Perfect PC air cooling

Optimising the airflow inside your computer will make it run quieter, cooler and potentially faster, says *Josh Blowell*.

REQUIREMENTS

CABLE TIES

You'll need lots of them but, don't worry: they're not expensive. You can get a bag of around 100 for under \$10.

A COMPUTER IN NEED OF TLC

A modern, bespoke PC built by a specialist is likely to be tidily built, so there may not be much for you to do. An old junker, however, may be well worth re-cabling.

SMALL SOFT BRUSH

This is used for dusting the PC. A horsehair paintbrush is best.

VACUUM CLEANER

It must have a hose attachment. Use it sparingly and with care.

When you bought or built your current PC, did you pay much attention to how the cables were routed? If you didn't, then the chances are your PC's cooling system is being stretched beyond its limits.

You may have kitted out your computer with the best of everything, but that counts for nothing if cooling air can't navigate its way through your PC's internal nooks and crannies. In this tutorial, we'll show you how to arrange your cables, avoid blocking precious airflow, and keep those noise and temperature levels down.

CLEAN IT OUT

As far as dust and muck attractors go, the guts of a PC must rank highly. Dust clogs fans and vents; it increases noise and reduces airflow. If your PC has developed a hum or an overheating problem, it is likely dust is to blame. Your current fans shouldn't need replacing, even if they're making some funny noises. If they're full of grime they won't be working at full efficiency — and they need to be cleaned.

To do this, turn off your computer at the mains but leave the cable plugged in. Leaving the cable connected keeps the protective earth line connected. The cable earths the power supply, case and installed components. You'll want to keep the internals well earthed because now you need to clean your PC with a vacuum cleaner and a paintbrush.

Using a new paintbrush for this is best. If you don't have any new ones lying around, the brush must be clean, dry and supple. It should also be made of hair, not nylon or another synthetic. Turn on your vacuum and grab the hose nozzle with your free hand.

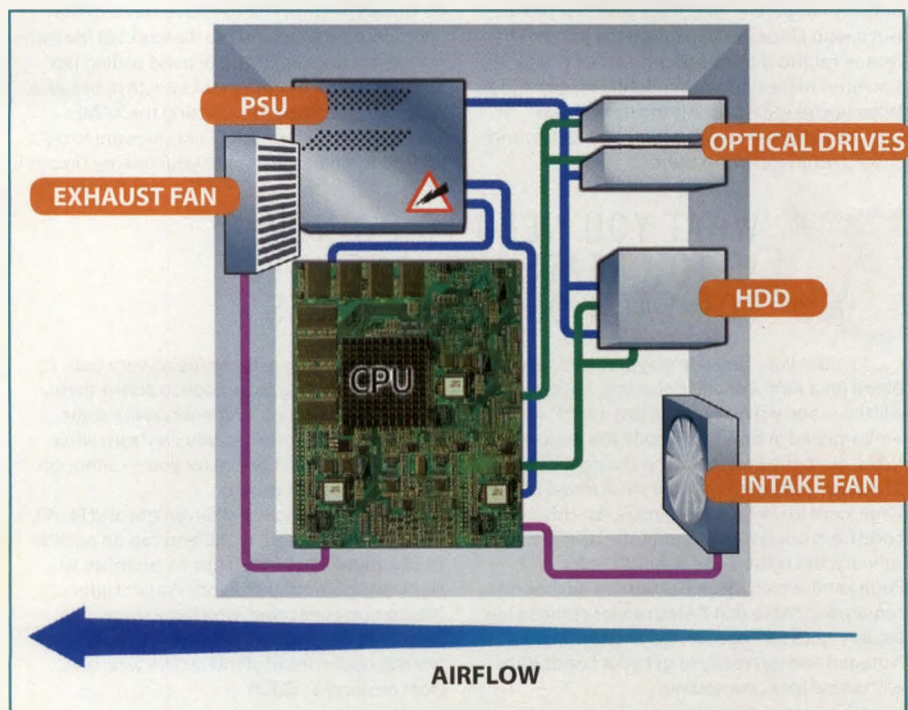
With the paintbrush, gently flick the dust from your computer's gizzards, straight into the vacuum cleaner. Be careful as you clean your cards and motherboard, but make sure you get into all the nooks and crannies. Pay particular attention to the heat sinks and fans. If your fans are particularly dirty, don't put the vacuum cleaner directly on them, as this will spin the fans and create a dynamo effect. Most motherboards won't even notice the current, but you may not be so lucky.

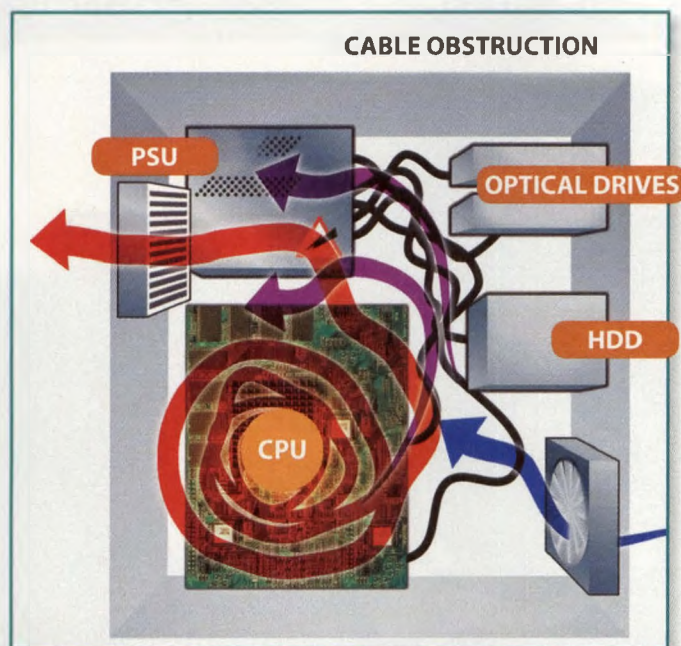
Sucking at them with a fan won't clean them anyway, so you will have to spray some household cleaner or rub alcohol onto a cloth and clean the fans by hand, one blade at a time. If anyone has been smoking near the PC, you can expect the fan blades to be covered in a thick layer of black filth. Just wipe it off — the fan will thank you for it. Make sure to poke the brush into the fins of your heat sinks. Pay special attention to the fins on your CPU cooler; get as much dust out as you can.

STRIP IT DOWN

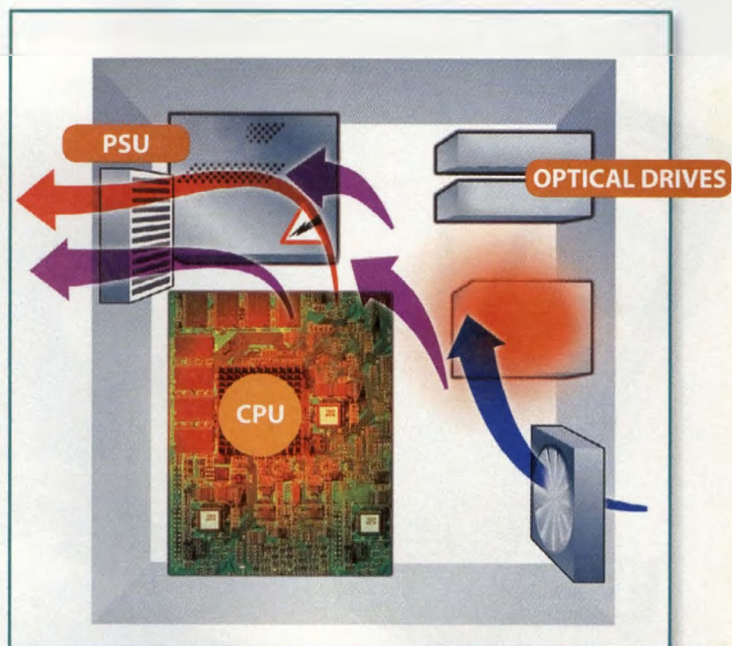
After the spring cleaning you can get in there without getting a lungful of choking PC mist. Now you have a chance to see what you're going to do. Whip out all the cables you can. All your cables need to be unplugged and put aside. The aim is to design your cable layout around the airflow; taking the wires out gives you a clean start and a fresh task outlook.

◀ This is the kind of cabling layout you'd expect to see in an ATX case. All the wires can be routed together, given sufficient length.





Here the passage of cool air is being impeded by a nest of wiring — and a static pocket of hot air has formed around the GPU and graphics cards.



A well-cabled case should allow a clear passage out.

Many computers, whether they be home- or shop-built, contain a bird's nest of cables. Left to hang free in the air and in front of fans, these create a wall of resistance, slowing the passage of air. The slower the air moves, the more heat that will linger in the case. This results in hot spots of static air, normally centred on the motherboard and graphics card. In turn this hot air will rise, to be sucked into the PSU, causing it to run hotter. The heat not only leads to annoying alarms and instability, it can shorten the life span of your components.

In general, air flows in from fans at the front of your case and out through fans at the back and the PSU. As a general rule of thumb, it's better to have more exhaust fans than intake fans. If your PC only has one fan it should be mounted as an exhaust fan. It's easier to create airflow through the case with a vacuum. Don't overload on exhaust fans, though: balance the number with intake fans.

The aim of cable routing is to allow air to pass from the intake fans to the exhaust fans with minimal obstruction. So how you route your cables depends largely on the position of the fans and heat sinks in the computer. There must be a clear passage from the front of the computer to the back, with the CPU sitting directly in the flow. If you can't manage this, your case is likely to be prone to overheating. Either move your fans to allow a free flow, or buy more fans.

REWIRE LEAST-USED FIRST

Cables should be routed so that the wires and connectors you're likely to use are most

accessible. You don't want to find yourself having to totally rewire your case in a couple of months, because you bought a new hard drive or graphics card. For this reason, make sure to run those wires last.

After routing the fan cables, you should spread the power cabling around the computer. Try to keep all the cabling as a single thick run, which passes down the far inside of the case. You can use ties to hold the power cables in a trunk. Spiral wrap can shape cables down the side of the case, as you can bend the wrapped bunch of cables. Better yet, cable clips stick to the inside of your case and hold cables out of the airflow.



DON'T OVERLOAD ON EXHAUST FANS, THOUGH: BALANCE THE NUMBER WITH INTAKE FANS

As the main bundle passes by the level of drives and graphics cards, splay the cables off. If possible, run the cable along the side of the case. Cable clips can make it easier to keep the cables low. If you have an abundance of power cables and spare drive bays, it's sensible to leave a spare Molex hanging ready for new drives to arrive. Use cable ties or wrap to keep the line of power cables neatly bound. Stray cables cause turbulence in the airflow, which is even more of a problem in a tightly packed hard disk bay. Power cabling is simple to route, in comparison to other cables.

USE CABLE ORIGAMI

The worst type of cabling for blocking airflow is the old IDE ribbon cable. If you have these you'll need to use a little origami expertise. There's not much you can do with a linking strap between two drives, but the longer run of ribbon can be folded or scrunched around corners and brought to lie flat against the case.

Round IDE and SATA cables are much easier to route. Flex them to the side and tie them onto your chain of power cables. If you have a few of them, tie them together, and clip them to the back of your case with cable clips. If after your re-cabling you have spare cables hanging

from your PSU, wedge them out of the way above the PSU. Any spare wires should also be tucked away; either stuffed into empty drive bays, or down the side of drives.

There will come a time when you have to take your computer apart and fix it. Don't use a million cable ties, or straps, and use as little spiral wrap as possible. It may look cool to jacket wire in as much plastic as possible, but it'll be annoying to remove. If you want the wiring to look cool, use a sparse amount of ties, but cover the wiring with braided cable sheath instead. **ETC**



downtime

HIGH-PERFORMANCE PLAYTIME

GEAR

GAMES

CHIP CHAT



Netcomm V24W Wi-Fi IP phone

NetComm's new V24W Wi-Fi IP phone is an all-in-one Wi-Fi phone bundling SIP, Skype, a web browser and MSN Messenger into one handset. And — of course — because it all works via a Wi-Fi connection, there are no mobile carrier data charges. You can use it on your Wi-Fi at home, work, or in any of thousands of hotspots.

CONTACT Netcomm
ONLINE www.netcomm.com.au
PRICE \$599.50

VERDICT ★★★★★

Sony PSP Updates

The Sony PSP has developed more functionality thanks to two system software updates in short succession. Released in December, version 3.8 added internet radio, the ability to receive RSS distribution of photos, and video previews from video thumbnails. But version 3.9, just released for US users only at time of writing, now lets you make Skype phone calls.

CONTACT Sony
ONLINE <http://au.playstation.com/>
PRICE Free

VERDICT ★★★★★

Cooler Master Aquagate Max

If you've got a hot engine in your PC, say a Core 2 Quad or an AMD Athlon FX 64, this is the liquid-cooling system to keep it running cool. The Cooler Master Aquagate Max is the newest version of the popular Aquagate cooling kit, which contains everything you need to refrigerate your PC, plus a cool-looking green coolant.

CONTACT Rectron
ONLINE www.rectron.com.au
PRICE \$295

VERDICT ★★★★★

ASUS XONAR 1 USB Audio Station

There's probably no easier way to upgrade the quality of your computer's sound than by plugging this USB headphone amplifier from ASUS into your notebook or PC's USB port. It converts any stereo source into Dolby Headphone, Virtual Speaker, and 5.1 Dolby Digital & Pro-Logic II surround sound. It supports DirectSound, EAX & OpenAL for Vista/XP gaming.

CONTACT ASUS
ONLINE <http://au.asus.com/>
PRICE \$79

VERDICT ★★★★★

apc
LBER

Super cool

apc
1337

Very cool

apc
n00b

Uncool



The Book of Wireless

If you're not a trained tech and need to work with wireless networks, this book is a godsend. *The Book of Wireless, 2nd Edition* (ISBN 9781593271695) is the completely revised follow-up to the *Book of Wi-Fi*. It discusses everything from selecting and configuring hardware and software for Wi-Fi networks to using broadband wireless and Wi-Fi with smartphones.

CONTACT O'Reilly
ONLINE www.oreilly.com/store/
PRICE US\$29.95

VERDICT ★★★★★

Sanyo XACTI VPC-HD100

While every other vendor markets their HD camcorders at a premium, Sanyo pares its down to the essentials to make them affordable. Sanyo's XACTI VPC-HD100 records video at 1,920 x 1,080i HD resolution but costs less than \$1,000. It does its image processing on one integrated chip and uses flash memory cards instead of a bulky tape or disk mechanism.

CONTACT Sanyo
ONLINE www.sanyo.com.au
PRICE Under \$1,000

VERDICT ★★★★★

Garmin Nuvifone

Nokia has released GPS phones; Garmin retaliates by announcing the Nuvifone, a touchscreen device that combines a 3G phone, personal GPS navigator and mobile web-browser. Garmin has also paid a lot of attention to the user interface, which has effortless iPhone-style navigation with every function flowing from three primary icons: Call, Search and View Map.

CONTACT Garmin
ONLINE www.garmin.com
PRICE TBA

VERDICT ★★★★★

Norton AntiVirus for Mac

Viruses and malware for the Mac are rare. Still, we don't like the thought of an unprotected Mac. Although our last experience with a Mac version of Norton Security two years ago was not a happy one (basically, it didn't work), the new Norton AntiVirus for Mac from Symantec seems to work as effortlessly as its PC counterpart.

CONTACT Symantec
ONLINE www.symantec.com
PRICE \$59.95

VERDICT ★★★★★



Wipeout Pulse

Where *Troy Coleman's* going, he definitely needs roads.

Wipeout Pulse (WP) is the eighth incarnation of the futuristic anti-gravity racing series and the second iteration from developers Studio Liverpool, who brought us Wipeout Pure in 2005. Now let me preface this by saying I absolutely abhorred any and all pre-PSP versions of this franchise to the point where there was a... ah, hardware malfunction, where one PS2 control suddenly became four.

AVAILABLE PLATFORMS

PC-DVD	Wii	PS 3
PSP	XBOX 360	NINTENDO DS

CONTACT Sony

ONLINE <http://wipeoutpulse.com>

PRICE \$59.95

✓ Manic, fun and competitive.

✗ Same game model as every other Wipeout.

VERDICT ★★★★★

If you've had any experience with the Wipeout series any time in the last twelve years then you will know exactly what to expect in terms of gameplay. For those unfamiliar with the series, WP is an arcade-style racer where hovering, combat-ready vehicles zing their way around futuristic circuits, racing in earnest to be the first/fastest at the end of the race/time remaining. A heavy stream of electronica music with tracks licensed from internationally acclaimed artists such as Kraftwerk, Aphex Twin, Stanton Warriors and Dopamine fills the audio void and also adds a heightened sense of speed.

The single-player racing campaign is separated into a series of grids with anywhere from eight to 16 races spread over 24 reversible tracks. Time trials, speed races and 8-vehicle competitive races gives

plenty of variety, and the ability to take aim at each other with an assortment of weapons adds to the fun. The usual cache of weapons make up the arsenal — cannons, rifles, bombs, shuriken — but my favourite has to be the Leech beam — it works to drain an opponent's energy by locking onto it with a stream of lightning.

Wireless multiplayer via Ad Hoc and full Infrastructure mode gets you racing against up to eight friends simultaneously and also allows you to share your custom grids and ghost ships.

Even though it's pretty much the same game model as all the previous versions, WP has found a great home on the PSP. For some reason, the mobility of handheld gaming makes the title seem much more fun and should result in far less instances of hardware 'malfunction'.



Who needs land-locked *Need for Speed*? Wipeout FTW!

Clive Barker's Jericho

Jake Sekulla seeks vengeance and time travel.

Clive Barker's Jericho is a blood-tingling, squad-based first person shooter in which you take control of Captain Devin Ross and Team Jericho. Though Ross dies in the first level, his spirit is transferred into Sgt. Frank Delgado, and from there you can jump between the bodies of your other team mates to use the arcane abilities they each possess. Of course, each has a use at certain points further in the game.

The basic premise of Jericho is your team has been sent to close the Breach, which is a portal into the 'pyxis', where the biblical first born were trapped by God. Before you can pass through gates further and further into the pyxis, you must defeat bosses of historical evil such as Bishop Maltheus St. Clair, who led the Children's Crusade. For each gate you pass through you are taken back hundreds of years to different time periods.

AVAILABLE PLATFORMS

PC-DVD	Wii	PS 3
PSP	XBOX 360	NINTENDO DS

CONTACT Atari

ONLINE www.codemasters.com

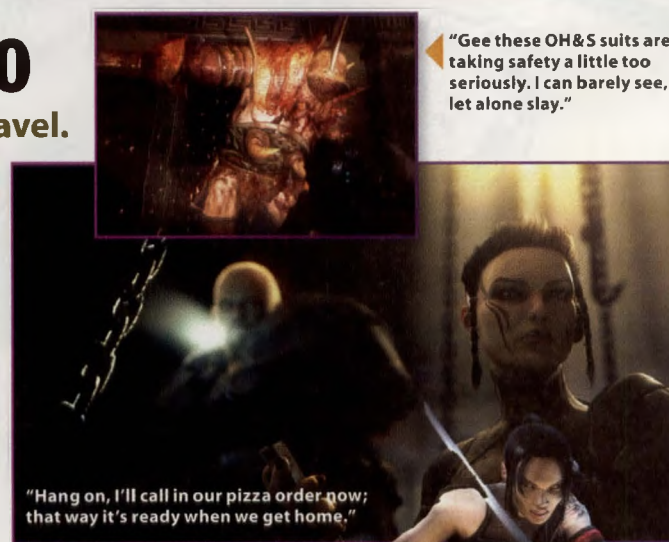
PRICE \$79.95

✓ Good graphics; immersive audio.

✗ Tired squad-based combat; mediocre AI; repetitive levels.

VERDICT ★★★★★

The graphics of Jericho are very realistic, with fire and rain effects looking quite convincing. The music and sound effects accompanying the game are very eerie, giving the player a good sense of immersion. The health bar is replaced with an indication of damage using red veins that run into the screen the more you get hurt. The whole screen slowly turns red, which can be annoying, but it's also helpful — as you'll know when you're close to death.



"Hang on, I'll call in our pizza order now; that way it's ready when we get home."

Though Jericho brings nothing new to the table, it's a very playable first-person squad game — far from the worst out there. Beyond the suitably gruesome plot, it's really just more of the same. If you're a Clive Barker fan, consider it. If you don't know him from a bar of soap, there's plenty else out there to hold your attention.



Super Mario Galaxy

Peter Dockrill trades plumbing for rocket science.

Ever since his first appearance way back in 1981's *Donkey Kong*, the Mario character has come to represent one thing to platform gamers: innovative and high-quality arcade fun. Over the intervening years, Nintendo's signature mascot has been used in more than 100 games across multiple genres, and, while not every one of these spin-offs can be said to have been a success, the 'core' Mario catalogue of titles has always demonstrated the cutting edge of platform gaming. And now, Nintendo has struck gold again with *Super Mario Galaxy*.

As per the plumber's usual plotline, Bowser has kidnapped Princess Peach and it's up to you to rescue her. What's different is that this time you're floating in space in a 'cosmic observatory' and to get Peach back you'll need to recover

stars by blasting off to distant galaxies. Each galaxy constitutes a separate 3D arena with its own particular puzzles and play styles: some offer large land masses; others are made up by a number of small, floating planetoids.

Super Mario Galaxy's central innovation lies in its full exploitation of the concept of '3D gaming' — the notion of gravity is fluid: Mario can traverse all sides of planetary objects; he is frequently pulled between competing gravitational fields; and the spherical nature of the gameplay leads to some unique control issues and challenging camera perspectives (eg. upside-down).

If criticism is to be made, it's that the level design is inherently more linear than in previous Mario titles: galaxies often steer you upon a set course across planetary

objects rather than encouraging free-roaming exploration of larger 3D environments. Oddly, this can make the experience seem more like a 2D game at times. But, in the end, *Super Mario Galaxy*'s playful nature and its ability to consistently surprise you make for a delightful gaming experience and one where you can never be too sure what the next galaxy might hold.

AVAILABLE PLATFORMS

PC-DVD	Wii	PS 3
PSP	XBOX 360	NINTENDO DS
CONTACT Nintendo		
ONLINE www.nintendo.com.au		
PRICE \$99.95		
✓ Brilliant reinvention of 3D platform gaming.		
✗ Ultimately more linear than its predecessors.		

VERDICT ★★★★★



Sci-fi: to boldly go where no Mario game has gone before...

Call of Duty 4

Orestis Bastounis has all the fun of modern warfare.

Call of Duty 4 is a corker. It raises the bar for graphical quality in games. Then there's the level design: locations that capture the tragedy of war. Little touches like a disused swimming pool in a grey building, or fighting it out in a demolished city.

The visuals are supported by an equally high-quality plot. Unlike previous historical-themed titles, in this near-future incarnation the player is out to prevent separatist Russians from detonating a WMD. Similar plots may have already been exhausted on TV shows and films, but being told from a *Call of Duty* perspective means putting the player right in the thick of it with believable characters, well-scripted dialogue and high-quality voice acting.

What a shame it's all over so fast. It comes as a surprise to see the credits roll after only four hours of intense gaming. The single-player campaign is also completely linear. That beautiful world appears to be

powered by clockwork; you can predict exactly when the enemy will appear and time your shot perfectly in almost every situation.

However, the multiplayer element builds on those solid foundations to introduce some new gameplay ideas. There are plenty of achievements, for everything from taking out five opponents to knifing players in the back. And lovely touches such as Last Man Standing, where, close to death, you can whip

out a pistol and get a few final shots off at your opponent. Alternatively, you can deny your enemy the kill and put the bullet in your own head. With an open-class system and gameplay right up there with *Team Fortress 2*, *COD4* is definite shelf stocker.

AVAILABLE PLATFORMS

PC-DVD	Wii	PS 3
PSP	XBOX 360	NINTENDO DS
CONTACT Activision		
ONLINE www.callofduty.com		
PRICE From \$99.95		
✓ Beautiful destruction; strong multiplayer.		
✗ Single-player campaign is short.		

VERDICT ★★★★★

In the line of fire: *COD4* raises the quality bar, but does it play for long enough?





chip chat

by
Peter Dockrill

DON'T TASE ME, DJ!

This column recently expressed amusement at a prime example of the silly side of 'convergence': a mobile phone that doubles as a Marlboro cigarette pack (APC January, page 118). Well, another day, another doozy, as they say (They've never said that — Ed.), and, yes, now we have an even more-shocking fusion for you: the all-in-one taser and MP3 player. Yes folks, whether you're patrolling those bad neighbourhoods solo and

could do with a little adult-contemporary to help subdue the tension, or rather bopping along to Bobby McFerrin on the go and discover you may require a controversial device to

stun, maim or even kill, your needs appear to be well covered. (Optional plug-in digital voice recorder for securing perp confessions unlikely to be sold separately.)



Is that so? Thanks for
"letting us know".

EMPLOYEE MUST
"WASH HANDS"NOT SO
"UNNECESSARY"
AFTER ALL

You know what's so great about the internet? OK, OK — so there's plenty of answers to that question, but the one I'm angling for here is that it provides one great, big public repository for all that silly, inane and trivial stuff which otherwise would never see the light of day outside

of a dumb joke between friends: the kind of material that once upon a time may never have risen above constituting a "harebrained scheme" or, at best, ended up gracing the pages of a personal journal or limited-release zine. In this age and medium of unbridled, inexpensive publishing, such ephemera is let loose upon the world for keeps; with the internet, the inconsequential is immortalised.

Take today's example: *The "Blog" of "Unnecessary" Quotation Marks* — *Misinterpreting Bad Punctuation Since 2005*. In another time, such a periodical just couldn't have existed on such an accessible scale; the topic would have been deemed just *too damn unimportant* and, indeed, *unnecessary* to justify the expense and production etc. involved in delivering such literature to an unsuspecting (and over-punctuating) public. But, thanks to the internet, we now have *The Blog of UQM*, and thanks to *The Blog of UQM* we now have an unending stream of funny real-world pictures like the one above (and all the baffled wonder and head-scratching they produce). For more of the same, head on over to <http://quotation-marks.blogspot.com/>. And be thankful for the internet!

ALL THAT
GLITTERS

Honestly, sometimes Chip Chat just writes itself. I'm serious! Observe a recent press release we received here at the mag: "PC Tools issues warning of 'flirting robots' unleashed on social networking and online dating web sites". Hang on, that's my mate you're talking about! (But apparently not!) Supposedly, PC Tools has "uncovered new software developed in Russia that flirts with people seeking relationships online, in order to collect their personal data ... The software, *CyberLover*, can conduct fully automated flirtatious conversations with users of chat-rooms and dating sites to lure them into a set of dangerous actions...". Hmm, this is starting to get a bit interesting! "CyberLover can

establish a new relationship with up to 10 partners in just 30 minutes and its victims cannot distinguish it from a human being." OK, OK, so *maybe* it's a serious issue. APC advises our lovelorn readers to exercise caution in their online pursuits and, if, at any time, you suspect your paramour may actually look like the pic below, then get the hell out of there! She ain't worth it! **BOC**

Killer-robot women: the appeal is obvious, but so is the danger...



The Green Concept Power Pioneer

Fortune Tec invites you to enjoy



Ultra high power - for Performance
Ultra high efficiency - for Energy Saving
Ultra high environmental friendly - for Protecting our earth



FreeStyle Modular 1000W

- High efficiency >85%. Active PFC
- High power from 750W~1000W
- Smart modular cable management
- Wrapped with unique gift box and reusable hard cover aluminium case
- Environmental friendly - RoSH and WEEE Compatible
- Support nVIDIA SLI, ATI R600 Cross Fire x 2



New Ranges of PC cases

KA-6K11 Micro Tower

KA-6C11 Middle Tower

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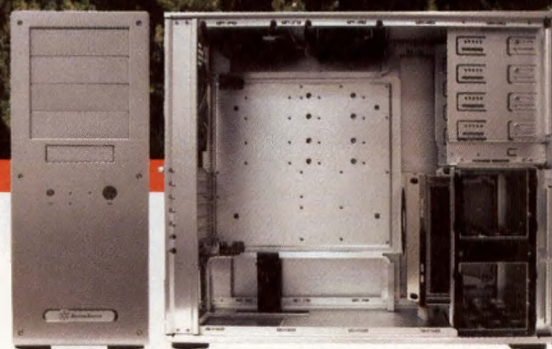
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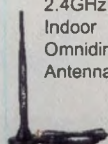
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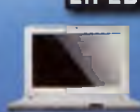
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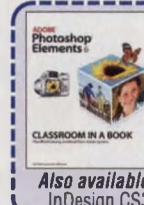


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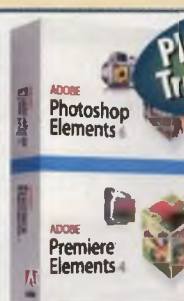
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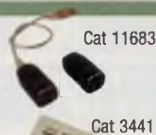
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17115-1	LGA775 Motherboard with ISA Slots	\$649
15156-1	USB to VGA Adapter	\$179
8551-1	12v DC Input ATX Power Supply 300W	\$319
9549-1	24v DC Input ATX Power Supply 450W	\$399
1008258-1	Handheld Trackball with Laser Pointer - Cordless	\$139
8751-1	Mini Keyboard with Integrated Touchpad	\$139
2459-1	eSATA PCI Express (PCIe) 1 Port eSATA Card	\$50
2462-1	PCI 2 Port eSATA Card	\$94
6988-1	SATA 2.5" HD to eSATA & USB Combo Enclosure	\$65
6913-1	SATA 3.5" HD to eSATA & USB Combo Enclosure	\$85
1008319-1	SATA to eSATA Backplane - 2 Port	\$18
1008241-1	eSATA Cable 1m	\$14.50
3626-1	USB Microscope Basic	\$239
3685-1	USB Microscope with Microtouch	\$269
3686-1	USB Microscope with Microtouch Trigger	\$295
3687-1	USB Microscope PLUS with Measurement	\$359
3688-1	USB Microscope with Microtouch & Measure	\$499
3683-1	Digital TV Tuner	\$149
3692-1	Digital & Analogue Hybrid TV Tuner	\$169
2403-1	Firewire 1394A 2 Port	\$129
2402-1	Gigabit Ethernet	\$119
2401-1	eSATA 2 Port	\$119

Cat 9287



Cat 1008265



Cat 15156



Cat 8751



Cat 6913



Cat 3626

Not sure what product you need? Call us today for friendly advice!
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Point of Sale

Cat. No.	Description	Price
POS Bundles		
9514-1	Basic Point Of Sale Bundle	\$799
9510-1	Premium Point Of Sale Bundle	\$999
Barcode Scanners		
9493BLK-1	USB Barcode Scanner - CCD	\$189
1008149-1	USB Barcode Scanner - Laser	\$359
1008178-1	Bluetooth Cordless Barcode Scanner - CCD	\$599
Assorted Hardware		
8264-1	Magnetic Card Reader Track 1, 2 & 3 - PS/2	\$139
5839BLK-1	Thermal Receipt Printer - Parallel	\$569
9512BLK-1	Cash Drawer - RJ12 (Connects to receipt printer)	\$179
5551-1	Mini Label Printer - 54mm Wide	\$239
5751-1	Zebra LP2844 Label Printer - 104mm Wide	\$659
9338-1	Cheque Reader - PS/2	\$718



Cat 8264



Cat 1008178



Cat 5751

Gadgets

Cat. No.	Description	Price
3655-1	USB EPROM Programmer	\$499
1168-1	Car PC 12v - 1Ghz 512Mb 80Gb WinXP	\$1659
3527-1	USB 2.0 Analog TV Tuner & Video Capture	\$119
3102-1	VGA to Video Converter with VGA Pass-through	\$149
2726-1	PCMCIA 2 Port Serial Adapter	\$269
2737-1	PCMCIA to Parallel Adapter	\$269
6741-1	IDE to Compact Flash Adapter - Front Access	\$99
2874-1	Independent RAID Server - Dual IDE HD with Hot Swap	\$569
2959-1	Independent RAID Server - Dual SATA HD with Hot Swap	\$599
1248-1	Windows CE Based Terminal with Wyse Emulation	\$699
2457-1	PCIe to ExpressCard Adapter	\$109
8933-1	USB Macro Keypad - 20 Key Programmable	\$299
15141-1	USB Macro Stick - 16 Key Programmable	\$199
6885-1	USB to PCMCIA for Wireless Broadband Cards 32-bit	\$299



Cat 1168



Cat 3527



Cat 3102



Cat 2726



Cat 6741



Cat 2874



Cat 1248



Cat 2457

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Unique IT Solutions

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Australian located dedicated web servers.
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- from \$66/yr

Reseller plans available.

■ DEDICATED SERVERS

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available. Hosted on our redundant
Cisco Core Network for optimal reliability.

- from \$176/m

■ CO-LOCATION

From 1 Server to multiple cabinets. Our own
state-of-the-art, Carrier Neutral facility
served by multiple fibre carriers in Brisbane.

- from \$88/m

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Register your Domain Names now
including .com/.net/.org/.com.au/.net.au

- from \$13.75/m

cPanel Hosting

50MB Storage

2GB Bandwidth

\$66/yr

Dedicated Servers

QUAD-CORE XEON

Performance Servers

200GB Bandwidth

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From \$88/m

Co-Location

42RU Cabinet

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from \$990/m

Australia's Best Value Hosting Provider

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with every new package

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from **\$25** per month

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- Brisbane Datacenters
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- Dell Rackmount Servers
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Roy Morgan Survey June 07

BACK TO WORK

harristechnology



IT'S TIME TO UPDATE YOUR TECHNOLOGY



ONLY @ HT

QUAD CORE

acer intel Core 2 Duo

T661 Desktop

\$1299

V4793 | RENT \$11.77/wk* | p.13



FREE UPGRADE

TO 160GB HARD DRIVE AND 3 YEAR WARRANTY

6710b Notebook

\$1699

| RENT \$15.41/wk* | p.7

Windows Vista Business | V4794
Windows XP Professional | V4792

hp invent

Passport 250GB Portable Hard Drive

WD Western Digital

SAVE \$50



\$199 | U9546 | p.31

Reckon

QuickBooks Plus 2007/08

BONUS

\$150 CASHBACK

\$349 | U5977 | p.43

BEFORE CASHBACK YOU PAY \$499

BONUS 2GB USB Flash Drive

+ BONUS Upgrade to QuickBooks 2008/09




Colour LaserJet 1600 Printer

50% OFF

\$200 CASHBACK

\$199 | T6120 | p.53

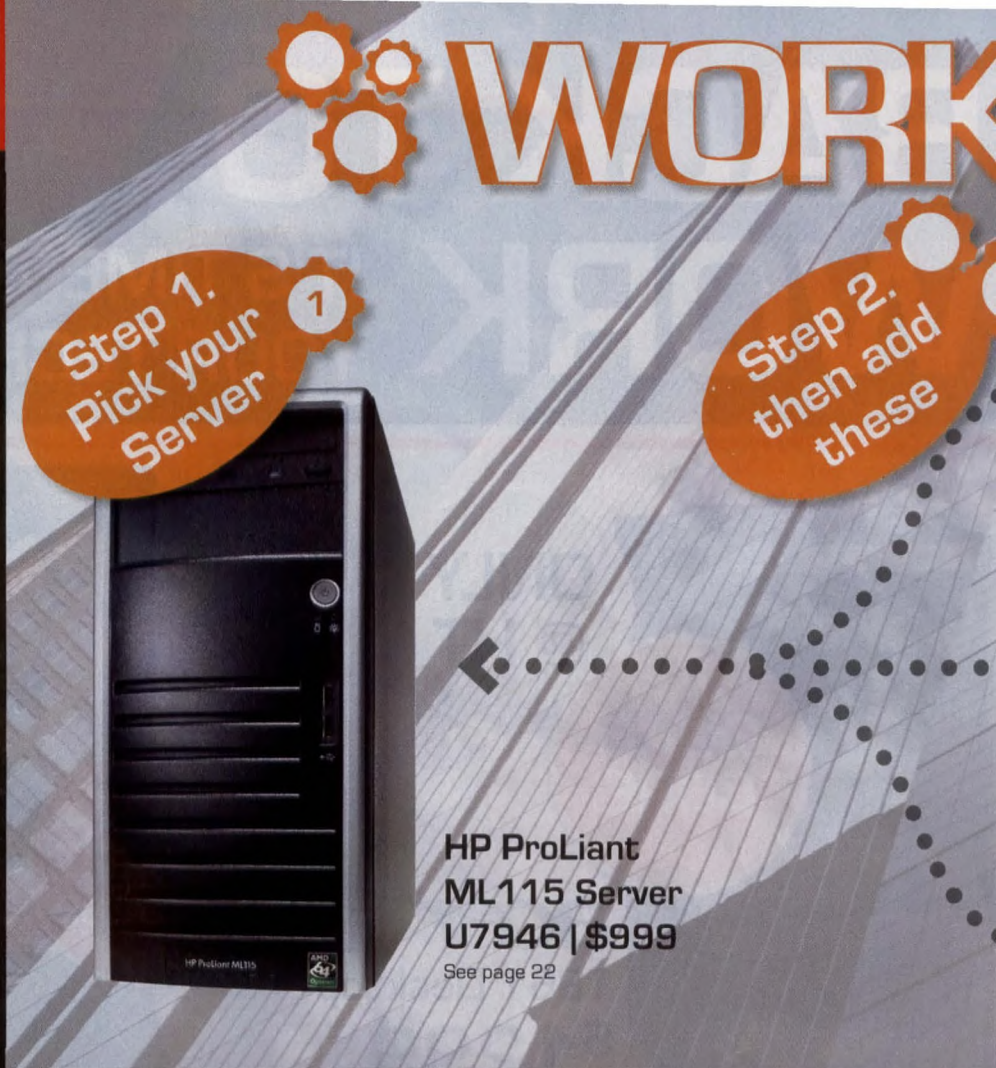
BEFORE CASHBACK YOU PAY \$399



RENT **SMART** BONUS OFFER SEE p.2

Contents

- 04 | Notebooks
- 12 | Desktops
- 14 | Monitors
- 16 | Projectors
- 18 | PDAs, GPS & Smartphones
- 20 | Mobile Phones
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- 30 | USB Flash Memory
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The advertisement features a black HP ProLiant ML115 Server tower. Above the server, there are two orange callout bubbles with gear icons. The first bubble says 'Step 1. Pick your Server' with a '1' in a gear. The second bubble says 'Step 2. then add these'. To the right of the server, the text reads 'HP ProLiant ML115 Server U7946 | \$999' and 'See page 22'. The background is a stylized graphic of a building facade with a dotted line and an arrow pointing towards the server.

WORK

Step 1. Pick your Server 1

Step 2. then add these

HP ProLiant
ML115 Server
U7946 | \$999
See page 22

RENT **SMART** BONUS*

Rent over \$1500 and pick 2 Bonuses!

*This offer is available to customers who RentSmart more than \$1500 from Harris Technology on a 48 or 36 month term only. Offer is available for applications received between 01/02/08 to 29/02/08. Qualifying customers can pick one product from BONUS A (iPod nano 4GB V1514 or 7" Kodak Digital photo frame V4650 or a Sony digital camera V1836) and one product from BONUS B (Samsung ML2010 Printer T0775 or Plantronics headphones V2725)

SOLUTION

harristechnology



Power Protection | U5222 | \$459

See page 23



Data Protection | T3491 | \$799

See page 23



Tape Media | L2132 | \$19

See page 23

**Step 3.
Have it all
installed**



HARRIS TECHNOLOGY

SERVICES

Server Installation
Microsoft SBS Server 2003
U589B | \$810

BONUS A

BONUS B

SELECT ONE



iPod Nano 4GB

OR

7" Kodak Digital Photo Frame



OR



Sony Digital Camera



SELECT ONE

Uniden Phone



OR

Plantronics Headphones



OR

Samsung ML2010 Printer



or a Uniden cordless phone (single headset) - V2912). Offer will be fulfilled in-store on receipt of your equipment. Not to be used in conjunction with any other RentSmart or Harris Technology offer. RentSmart is a rental facility operated by RentSmart Pty Ltd. and is available to approved customers on selected products with a total retail value over \$550. ABN 16 073 225 457.

Extensa 5220

- Intel Celeron M 540 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11b/g
- Acer Orbicam Camera
- Up to 2 Hours Battery Life
- Weighs 2.9kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Home Basic
- 1 year warranty

\$649 | V4244 | RENT \$7.23/wk*
BEFORE CASHBACK YOU PAY \$798

**\$149
CASHBACK¹**



acer



NEW

BONUS

530

- Intel Core Duo T2400 1.8GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Up to 2.7 Hours Battery Life
- Weighs 2.7kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty

\$949 | V3564 | RENT \$8.59/wk*

BONUS Norton Internet Security software²



Satellite Pro A200 TOSHIBA

- Intel Celeron M 540 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11b/g
- Up to 4 Hours Battery Life
- Weighs 2.7kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Home Basic
- 1 year warranty

\$825
V3082 | RENT \$7.47/wk*

BONUS Bag, Internet Security Software & 25 DVD Media Pack



**\$99
CASHBACK¹**

BONUS

Extensa 5620

- Intel Core 2 Duo T5450 1.6GHz
- 2 x 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Integrated CrystalEye Webcam
- Up to 3 Hours Battery Life
- Weighs 2.9kg
- Windows XP Professional
- 1 year warranty

LIMITED STOCK

\$1199 | V4784 | RENT \$11.76/wk*
BEFORE CASHBACK YOU PAY \$1298

BONUS 2 Year Acer Extended Warranty & Bag³

acer



*For terms and conditions, including RentSmart, see page 47. RentSmart Bonus offer details on page 2. Rent price based on 48 month term. ¹Cashback offer via redemption from Acer between 01/02/08 and 29/02/08. Visit www.acer.com.au/cashback for more details. ²Norton Internet Security Software not installed. ³Offer

SAVE
\$100

BONUS



6710b

- Intel Core 2 Duo T7100 1.8GHz
- 1GB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti ±Dual Layer
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Weighs 2.6kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows XP Professional
- 1 year warranty



LIMITED STOCK

\$1199

| U8845 | RENT \$10.86/wk*

● **BONUS** 120GB USB External Hard Drive

Satellite Pro A200

TOSHIBA



- Intel Core 2 Duo T5450 1.6GHz
- 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11b/g
- Up to 4 Hours Battery Life
- Weighs 2.7kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- Windows XP Professional Downgrade Discs
- 1 year warranty



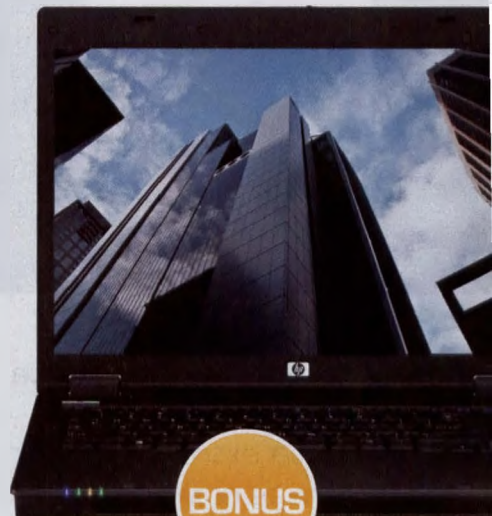
NEW

BONUS

\$1319

| V3085

RENT \$11.96/wk*

● **BONUS** Bag, Internet Security Software & 25 DVD Media Pack

BONUS

6710s

- Intel Core 2 Duo T7300 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Up to 4.25 hours battery life
- Weighs 2.6kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows XP Professional
- 1 year warranty



\$1499

V2226 | RENT \$13.60/wk*

V4453 | RENT \$13.60/wk*

● **BONUS** 320GB External Hard Drive OR Multifunction Printer⁵

ThinkPad R61

lenovo

- Intel Core 2 Duo T7300 2GHz
- 2 x 1GB DDR2 RAM (Including Bonus 1GB)
- 160GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth V2.0
- Up to 5 Hours Battery Life
- Weighs 2.9kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows XP Professional
- 1 year warranty



LIMITED STOCK!

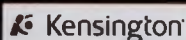
\$1599

| U9657 | RENT \$14.50/wk*

PROMOTION Microsoft Office (Small Business Edition) license⁴ELIGIBLE FOR
RENT SMART
BONUS

available from 1/2/08 to 29/2/08 or while stocks last only. ⁴Bonus Microsoft Office (Small Business Edition) license by redemption when you purchase this notebook together with any Lenovo accessory. Terms, conditions and redemption details available at www.lenovo.com.au/F1. ⁵Offer available from 1/2/08 to 29/2/08 or while stocks last only.

Microsaver Combination Notebook Lock



\$69 | V2890

Slim MicroSaver Security Cable System



\$85 | E1155

**Upgrade Anytime to
Windows Vista Ultimate**
and start to enjoy the
exclusive extras - For your
business or your home!

Business to Ultimate Upgrade
\$199 | V4086

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\$249 | V4089



What more do I get with Vista Ultimate?

- Protect your data against loss with Windows BitLocker Drive Encryption.
- Experience photos and entertainment in your living room with Windows Media Center.
- Create high definition movies with Windows Movie Maker in High Definition

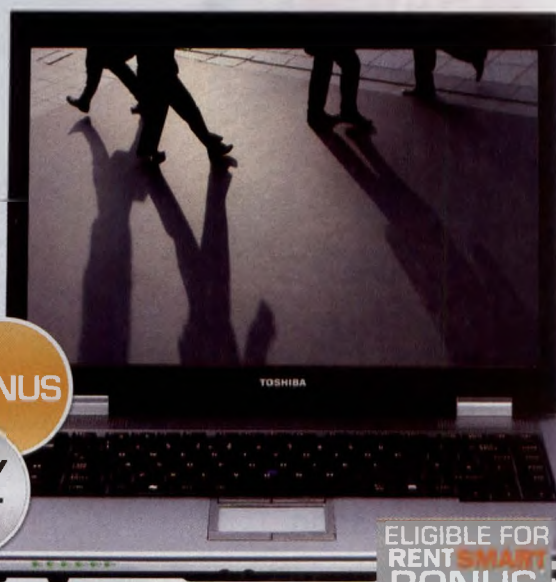
Satellite Pro S200

Excellent performance with
Toshiba engineering

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Up to 3.5 hours of battery life
- Weighs 2.9kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows XP Professional
- 3 year warranty (inc bonus extended warranty)

BONUS

**ONLY
@ HT**



ELIGIBLE FOR
**RENT SMART
BONUS**

\$1599 | U6917 | RENT \$14.50/wk*

BONUS 2 YEAR EXTENDED WARRANTY¹



6715b

- AMD Turion 64 X2 TL-64 2.2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WSXGA+ Widescreen**
- ATI Radeon Xpress 1250 with up to 512MB Shared
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Weighs 2.7kg
- Up to 3.75 Hours Battery Life
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty



Windows Vista Business



\$1599 | U6011 | RENT \$14.50/wk*

BUNDLED with Additional Battery

ELIGIBLE FOR
**RENT SMART
BONUS**

15.4" Messenger Bag

BELKIN



\$99 | T4359
Also available in Black

15.4" Notebook Bag

BELKIN



\$58 | L4287

*For terms and conditions, including RentSmart, see page 47. RentSmart Bonus offer details on page 2. Rent price based on 48 month term. ¹Bonus offer available only while stocks last. ²Bonus Microsoft Office (Small Business Edition) licence by redemption when you purchase this notebook together with any Lenovo accessory. Terms, conditions and redemption details available at www.lenovo.com.au/F1. ³Bonus RAM not installed. ⁴Savings based on Office Small Business box vs licence kit pricing at Harris Technology as at 08/01/08. ⁵Free Bonus upgrade available between 01/02/08 and 29/02/08 or while stocks last. Bonus Upgrade RAM installed.

6710b

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Up to 4.25 hours of battery life
- Weighs 2.6kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty

ONLY
@ HTFREE
UPGRADE**\$1699** | RENT \$15.41/wk*Windows Vista Business | V4794
Windows XP Professional | V4792● **FREE UPGRADE** TO 160GB HARD
DRIVE AND 3 YEAR WARRANTY⁵

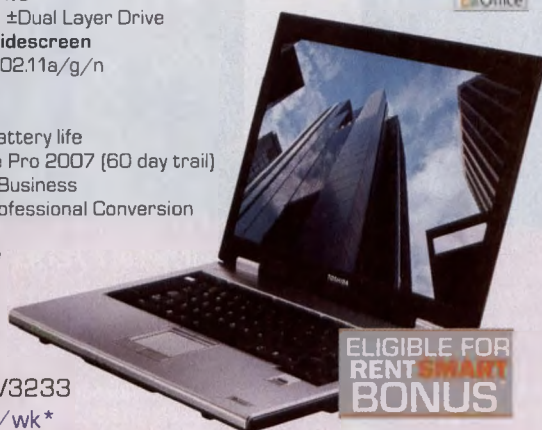
Tecra A9

- Intel Core 2 Duo T7700 2.4GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Weighs 2.9kg
- Up to 4 hours battery life
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- Windows XP Professional Conversion Disc provided
- 1 year warranty

\$1899 | V3233

RENT \$17.23/wk*

TOSHIBA

ELIGIBLE FOR
RENT SMART
BONUS

ThinkPad R61

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA+ Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Integrated Webcam
- Up to 5 Hours of battery life
- Weighs 2.9kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty

ONLY
@ HT**\$1699** | RENT \$15.41/wk*Windows Vista Business | V2258
Windows XP Professional | V2259**PROMOTION** Microsoft Office
(Small Business Edition) licence²

lenovo

ELIGIBLE FOR
RENT SMART
BONUS

CR25GN Gold

- Intel Core 2 Duo T7250 2GHz
- 2 x 1GB DDR2 RAM (inc. Bonus)³
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **14.1" WXGA Widescreen**
- ATI Mobility Radeon X2300 with up to 319MB HyperMemory
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.5kg
- Windows Vista Home Premium
- 1 year warranty

\$1899 | V1628 | RENT \$17.23/wk*Also Available in
Black, Blue, Red, Pink and White● **BONUS** 1GB RAM³

SONY

ELIGIBLE FOR
RENT SMART
BONUSPurchase Microsoft Office and Save up to \$290! ⁴

Microsoft Office 2007 software is a complete, easy to use suite of productivity and information management software to help business professionals save time and stay organised. Purchase a Microsoft Office Licence Kit with a notebook or desktop for simple licence activation and save!

Microsoft Office Basic 2007 Medialess Licence Kit	V4695	\$289
Microsoft Office Small Business 2007 Medialess Licence Kit	V4774	\$399
Microsoft Office Professional 2007 Medialess Licence Kit	V4773	\$549



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COMMITTED TO MEMORY

BOOST PERFORMANCE!

- Boost performance by up to 30%
- Extend battery life by up to 10%

Toshiba P200

1GB	T5518	\$73
2GB	U4647	\$175

Acer TravelMate 7720G

1GB	U5797	\$73
2GB	U5720	\$175

Sony VAIO FZ25GN

1GB	T7277	\$73
2GB	V0610	\$175

HP 6710b & 8510p

1GB	T7407	\$73
2GB	U8799	\$175

Lenovo ThinkPad T61

1GB	T6682	\$80
2GB	U6871	\$179

Apple MacBook & Pro

1GB	T9372	\$59
2GB	U5127	\$111

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- #1 in memory worldwide

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VAIO FZ25GN

Elegant design meets business function

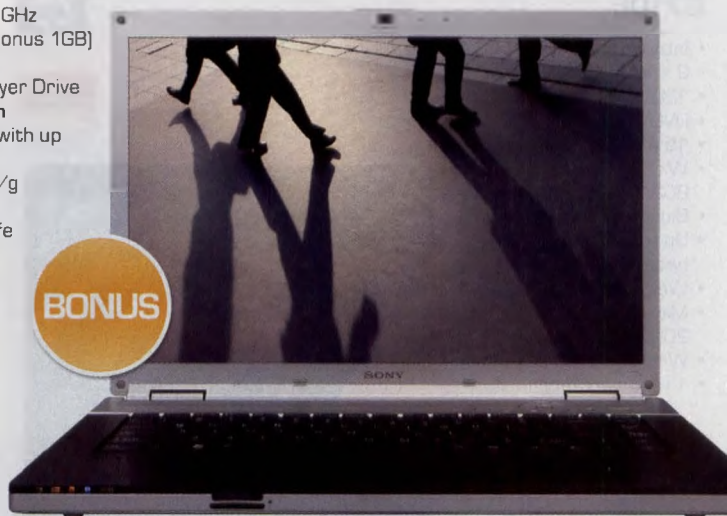
- Intel Core 2 Duo T7250 2GHz
- 2 x 1GB DDR2 RAM (inc bonus 1GB)
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- nVidia GeForce Go 8400 with up to 383MB TurboCache
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Up to 2.5 hours battery life
- Weighs 2.7kg
- Windows Vista Business
- 1 year warranty

BONUS

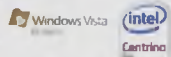
\$2099 | V2705

RENT \$19.04/wk*

BONUS 1GB RAM³



SONY.



RENT SMART BONUS

Business Performance



SAVE \$100

BONUS

8510p

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM (inc bonus RAM)
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WSXGA+ Widescreen**
- ATI Mobility Radeon HD 2600 graphics with 512 MB HyperMemory
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Microsoft Office Pro 2007 (60 day trial)
- Windows Vista Business
- Windows XP Professional Conversion Disc provided
- 1 year warranty

2.8kg

5 HOUR BATTERY LIFE



17" Desktop Replacement



\$99 CASHBACK

BONUS

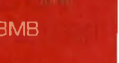
NEW

TravelMate 7720G

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 2 x 250GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **17" WXGA Widescreen**
- ATI Radeon HD 2600 with up to 768MB HyperMemory
- Wireless LAN 802.11a/g/n & Bluetooth v2.0
- Integrated CrystalEye Webcam
- Microsoft Office Pro 2007 (60 day trial)
- Windows Vista Business
- Windows XP Professional Conversion Disc provided
- 3 year warranty

3.8kg

3.5 HOUR BATTERY LIFE



\$1999 | V2304

RENT \$18.13/wk*

BONUS 1GB RAM

\$2399 | V4870 | RENT \$21.80/wk

BEFORE CASHBACK YOU PAY \$2498

BONUS 2 year extended warranty & Bag

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. *Accessible capacity of hard drive may be less due to pre-installed software. †Cashback via redemption from Acer between



6710b

Powerful business computing
with Hi Res display



- Intel Core 2 Duo T7700 2.4GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WSXGA+ Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Up to 5.25 hours of battery life
- Weighs 2.6kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty



\$1999 | RENT \$18.13/wk*

Windows Vista Business | V1234

Windows XP Professional | V1238

RENT OVER \$1500 AND PICK 2 BONUSES! See p2-3.

Stylish 17" Desktop Power



Satellite Pro P200 TOSHIBA

- Intel Core 2 Duo T7700 2.4GHz
- 2 x 1GB DDR2 RAM
- 250GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **17.1" WSXGA+ Widescreen**
- ATI Radeon HD 2600 with up to 767MB HyperMemory
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty



3.3 kg



BATTERY LIFE

Business Reliability



Tecra M9 TOSHIBA

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **14.1" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Microsoft Office Pro 2007 (60 day trail)
- Windows XP Professional Conversion Disc provided
- Windows Vista Business
- 3 year warranty



2.5 kg



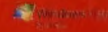
BATTERY LIFE

Ultimate Business Computing

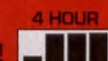


ThinkPad T61 lenovo

- Intel Core 2 Duo T7500 2.2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- **15.4" WXGA Widescreen**
- DVD SuperMulti Dual Layer Drive
- Fingerprint reader
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 3 Year Warranty



2.7 kg



BATTERY LIFE

\$2749 | V3230
RENT \$23.99/wk*

\$2749 | V4832
RENT \$23.99/wk*

\$2999 | V1588
RENT \$26.03/wk*

PROMOTION Microsoft Office
(Small Business Edition) licence²

01/02/08 to 29/02/08. See www.acer.com.au/cashback for more details. ²Bonus Microsoft Office (Small Business Edition) licence by redemption when you purchase this notebook together with any Lenovo accessory. Terms, conditions and redemption details available at www.lenovo.com.au/F1. ²Bonus RAM not installed.

Price Breakthrough for Ultra Portable Notebooks

2210b

- Intel Core 2 Duo T7250 2.0GHz
- 1GB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **12.1" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Up to 4 hours battery life
- Weighs 1.7kg
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 1 year warranty



\$1499 | RENT \$13.60/wk*

Windows Vista Business | V4706
Windows XP Professional | V4707

Mobile Professional's Choice



Portege M600 TOSHIBA

- Intel Core 2 Duo T7100 1.8GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **13.3" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Fingerprint Reader
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 3 year warranty



LIMITED STOCK

\$2299 | V5036
RENT \$20.06/wk*

All-in-One Performer



TravelMate 6292 acer

- Intel Core 2 Duo T7500 2.2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **12.1" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Fingerprint reader
- Bluetooth v2.0
- Windows XP Professional
- 3 year warranty



\$2499 | V2695
RENT \$21.80/wk*

BUNDLED WITH 19" Monitor, Docking Station, Keyboard & Mouse

Business Reliability



ThinkPad X61 lenovo

- Intel Core 2 Duo T7250 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- **12.1" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Fingerprint reader
- Bluetooth v2.0
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 3 year warranty



\$2399 | V1624
RENT \$20.93/wk*

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. *Rebate available from Telstra. See page 20 for details, terms and conditions

SMART OPTIONS FOR MOBILE APPLICATIONS

Auto/Air Slimline Inverter

Power almost any notebook or accessory in your car.



\$129 | U8315

460cb Portable Printer

The freedom to print wirelessly on the go with a long lasting battery.



\$449 | T3509

Cruzer Micro U3 8GB SanDisk

Back up or store your data on the fly is a MUST to have.



\$99⁹⁵ | V2315

Bigpond Wireless USB Modem

Manage and be in touch with your business on your move!



\$299 | U8553
GET UP TO \$249 REBATE¹

Passport 250GB Portable Hard Drive

Portable storage where ever you go. When ever you need it.

SAVE \$50



\$199 | U9546

Mobility Bundle

This great Belkin Mobility Bundle is EXCLUSIVE to Harris Technology. Designed for your mobile needs, it represents excellent value for money.



\$99 | U9353

Stunningly Thin & Light**Portege R500 TOSHIBA**

- Intel Core 2 Duo U7600 1.2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- **12.1" WXGA Widescreen**
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Fingerprint Reader
- Microsoft Office Pro 2007 (60 day trail)
- Windows Vista Business
- 3 year warranty



\$2999 | V3851
RENT \$26.03/wk*

Sheer Compact Elegance**VAIO T227GNB SONY**

- Intel Core 2 Duo U7600 1.2GHz ULV
- 1GB DDR2 RAM
- 100GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **11.1" WXGA LED Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Windows Vista Business
- 1 year warranty



\$3599 | U6874
RENT \$30.88/wk*

Flagship Mobile Tablet**Portege R400 TOSHIBA**

- Intel Core Duo U2500 1.2GHz ULV
- 2 x 1GB DDR2 RAM
- 80GB* Hard Drive
- **12.1" WXGA LED CSV Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Windows Vista Business
- 3 year warranty



\$3849 | U4642
RENT \$33.03/wk*

DX7400 Small Form Factor

- Intel Core 2 Duo E4400
- 1GB 667MHz DDR2 RAM (2 x 512 MB)
- 160GB* SATA hard drive
- 16x dual layer DVD±RW drive
- Nvidia GeForce 8400 256MB Dual Head Graphics
- Microsoft Office Pro 2007 (60 day trail)
- Microsoft Windows XP Professional
- 3 year on-site warranty
- Fujitsu 19" LCD Monitor (optional)



HOT PRICE

WITHOUT MONITOR

\$899

V3927 | RENT \$8.14/wk*

WITH MONITOR

\$1099

V4862 | RENT \$9.95/wk*

MICROTOWERS

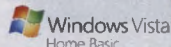
Aspire M1600 MT



- Intel Celeron 420
- 1GB 667MHz DDR2 RAM (2 x 512MB)
- 160GB* SATA hard drive
- 16x Dual Layer DVD±RW drive
- SiS Mirage 3 Graphic Controller
- 9 in 1 media card reader
- Microsoft Windows Vista Home Basic
- 1 year on-site warranty



HOT PRICE



\$499 | U9939

DX2300 MT

- Intel Pentium E2140 Dual Core
- 512MB 667MHz DDR2 RAM
- 160GB* SATA hard drive
- 16x dual layer DVD±RW drive
- Intel GMA 3000
- 16-in-1 media card reader
- Microsoft Office Pro 2007 (60 day trail)
- Microsoft Windows XP Professional
- 1 year limited on-site warranty



HOT PRICE

\$699

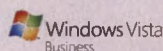
V2155 | RENT \$6.33/wk*

ULTRA SMALL FORM FACTOR

A61e ThinkCentre

ULTRA EFFICIENT

- AMD Athlon X2 BE 2350 Dual Core
- 1GB 667MHz DDR2 RAM (1 x 1GB)
- 160GB SATA Hard Drive
- 16x Dual Layer DVD±RW drive
- Integrated ATI Radeon X1200
- Microsoft Office Pro 2007 (60 day trail)
- Microsoft Windows Vista Business
- 3 years limited warranty



\$949 | U5408 | RENT \$8.59/wk*



VT L460 USFF

- Intel Core 2 Duo E4500
- 2GB DDR2 RAM (2 x 1GB)
- 320GB* SATA hard drive
- 16x dual layer DVD±RW drive
- Intel Graphics Media Accelerator 3100
- Microsoft Windows XP Professional
- 1 year on-site warranty



SUPER SMALL DESIGN

20 CM

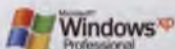
\$1199

V3043 | RENT \$10.86/wk*

*For terms and conditions, including RentSmart, see page 47. RentSmart Bonus offer details on page 2. Rent price based on 48 month term. *Accessible capacity of hard drive may be less due to preinstalled software.

T661**QUAD CORE**

- Intel Core 2 Quad Q6600
- Intel vPro Technology
- 2GB 667MHz DDR2 RAM (2 x 1GB)
- 320GB SATA hard drive
- 16x dual layer DVD±RW drive
- Intel Graphics Media Accelerator 3000
- Microsoft Windows XP Professional
- 3 year on-site warranty
- Acer 22" LCD Monitor (optional)



**ONLY
@ HT**



WITHOUT MONITOR

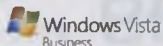
\$1299

V4793 | RENT \$11.77/wk*

WITH MONITOR

\$1599

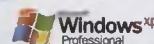
V4863 | RENT \$14.50/wk*

**M57 ThinkCentre
Small Form Factor**

- Intel Core 2 Duo E6550
- 1GB 667MHz DDR2 RAM (1 x 1GB)
- 160GB* SATA hard drive
- 16x dual layer DVD±RW drive
- Microsoft Office Pro 2007 (60 day trail)
- Microsoft Windows Vista Business
- 3 years limited warranty

**\$1399**

V3589 | RENT \$12.69/wk*

A55 ThinkCentre

- Intel Core 2 Duo E6300
- 2GB 667MHz DDR2 RAM (2 x 1GB)
- 250GB* SATA hard drive
- 16x dual layer DVD±RW drive
- Microsoft Windows XP Professional
- 1 year limited on-site warranty
- Samsung 940BW 19" LCD monitor (optional)



WITHOUT MONITOR

\$1099

U9749 | RENT \$9.95/wk*

WITH MONITOR

\$1399

V0827 | RENT \$12.69/wk*

**ONLY
@ HT**

MULTIMEDIA**iMac All-in-one**

Authorised
Solutions Reseller

**SLIM ALL-IN-ONE DESIGN
WITH DAZZLING DISPLAY**

- Intel Core 2 Duo 2.4GHz (Dual-Core)
- 1GB 667MHz DDR2 SDRAM - PC2-5300
- 320GB* SATA hard drive
- 8x double-layer SuperDrive
- PCIe x16 ATI Radeon HD 2600 PRO 256MB
- Apple MacOS X 10.5 Leopard
- 1 year warranty

**\$2149**

V0938 | RENT \$19.49/wk*

Aspire M5630 MT**QUAD CORE**

- Intel Core 2 Quad Q6600
- 2GB 667MHz DDR2 RAM (2 x 1GB)
- 500GB* SATA hard drive
- 9-in-1 media card reader
- BD-ROM / HD DVD-ROM combo
- ATI Radeon HD 2400PRO
- Microsoft Windows Vista Home Premium
- 3 year on-site warranty
- Acer P221WB 22" wide monitor

**\$2299**

V3438 | RENT \$20.06/wk*

ELIGIBLE FOR
RENT SMART
BONUS

27"-30" WIDESCREEN MONITORS

275T

- Interface: Analogue/Digital
- Resolution: 1920 x 1200
- Response time: 6ms
- Contrast ratio: 3000:1
- Brightness: 500 nits
- Wall-Mount Vesa: 200x100, height, swivel and tilt
- Warranty: 3 year on-site exchange and zero dead pixel policy



\$1499 | U9554 | RENT \$13.60/wk*

BONUS SAPPHIRE PCI-E HD2400 PRO GRAPHICS CARD¹

305T

- Interface: Digital
- Resolution: 2560 x 1600
- Response time: 6ms
- Contrast ratio: 1000:1
- Brightness: 400 nits
- Built-in Wall-Mount Vesa: 200x100 height, swivel & tilt
- Warranty: 3 year on-site exchange and zero dead pixel policy

**STUNNING
IMAGE
QUALITY**



\$1999 | U6636 | RENT \$18.13/wk*

FA-19W

- Viewable image: 19" wide
- Interface: Analogue/Digital
- Resolution: 1440 x 900
- Response time: 5ms
- Contrast ratio: 500:1
- Brightness: 300 nits
- Built-in speakers
- 3 years limited warranty



**HOT
PRICE**

\$279 | V1324

X193WB

- Viewable image: 19" wide
- Interface: Analogue/Digital
- Resolution: 1440 x 900
- Response time: 5ms
- Contrast ratio: 2000:1
- Brightness: 300 nits
- 3 years limited warranty



\$299 | BLACK | V2648

940N

- Viewable image: 19"
- Interface: Analogue
- Resolution: 1280 x 1024
- Response time: 5ms
- Contrast ratio: 700:1
- Brightness: 300 nits
- Wall-Mount Vesa: 75 x 75mm and tilt
- Warranty: 3 year on-site exchange and zero dead pixel policy



\$299 SILVER | U5078
BLACK | U5076

L196WTQ

- Viewable image: 19" wide
- Interface: Digital
- Resolution: 1440 x 900
- Response time: 2ms
- Contrast ratio: 3000:1
- Brightness: 300 nits
- Wall-Mount: 75 x 75mm swivel and tilt
- Warranty: 3 years on-site



\$379 | V3289

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. ¹Purchase the Samsung 275T monitor between 01/02/08 and 29/02/08 and receive a bonus Sapphire PCI-E HD2400 Pro graphics card.

24" WIDESCREEN MONITORS

harristechnology



AL2416WD

acer

- Interface: Analogue/Digital
- Resolution: 1920 x 1200
- Response time: 5ms
- Contrast ratio: 1000:1
- Brightness: 400 nits
- Wall-Mount Vesa: 100 x 100mm
- 3 years limited warranty



\$598

|A7514|RENT \$5.41/wk*

245B

SAMSUNG



- Interface: Analogue /Digital
- Resolution: 1920 x 1200
- Response time: 5ms
- Contrast ratio: 3000:1
- Brightness: 400 nits
- Wall-Mount Vesa: 200x100, height, swivel and tilt
- Warranty: 3 years on-site exchange and zero dead pixel policy



\$849

|V2083|RENT \$7.69/wk*

20"-22" WIDESCREEN MONITORS

FA-22WB

FUJITSU

- Interface: Digital
- Resolution: 1680 x 1050
- Response time: 5ms
- Contrast ratio: 1000:1
- Brightness: 300 nits
- Built-in speakers
- 3 years limited warranty



\$369

|V4152

HOT PRICE

206BW/226BW

SAMSUNG



- Interface: Analogue/Digital
- Resolution: 1680 x 1050
- Response time: 2ms
- Contrast ratio: 3000:1
- Brightness: 300 nits
- Wall-Mount Vesa: 100mm, swivel and tilt
- Warranty: 3 year on-site exchange and zero dead pixel policy



\$389

|U5892|20"

\$519

|U5893|22"

X223WB

acer

- Interface: Analogue/Digital
- Resolution: 1680 x 1050
- Response time: 5ms
- Contrast ratio: 2500:1
- Brightness: 300 nits
- Wall-Mount: 100x100mm
- 3 years limited warranty



\$389

|V2640

L226WTP



- Interface: Digital
- Resolution: 1680 x 1050
- Contrast ratio: 5000:1
- Brightness: 300 nits
- Response time: 2ms
- Wall-Mount Vesa: 100 x 100mm
- Warranty: 3 years on-site



\$539

|V3291

NEW

BENEFITS OF LCD TECHNOLOGY

- High colour saturation produces rich and bright colours
- Accurate colour reproduction results in a more true-to-life image
- LCD projectors are often preferred for viewing static images

LCD TECHNOLOGY

VPL-CX21

SONY

- 3LCD Technology
- XGA resolution (1024 x 768)
- 2100 ANSI Lumens
- Accepts Digital TV signals, including HDTV up to 1080/50i
- Multiple inputs
- Password security and control panel lock
- Image flip and image freeze function
- Includes soft carry case and remote
- Warranty: 2 years limited warranty



WITH PROJECTOR SCREEN

\$2429

\$2529

A7588 | RENT \$21.19/wk*

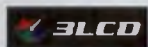
V0875 | RENT \$22.07/wk*



WX2200 Widescreen

TOSHIBA

- 3LCD Technology
- WXGA resolution (1280x800)
- 2200 ANSI-lumens
- 600:1 contrast ratio
- Weight: 2.8 kgs
- Password security & control Panel Lock
- Includes soft carry case and remote control
- 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement



NEW

BONUS

\$1699

V3237 | RENT \$15.41/wk*



X3000A

TOSHIBA

- 3LCD Technology
- XGA resolution (1024x768)
- 3000 ANSI-lumens
- 600:1 contrast ratio
- Weight: 2.8 kg
- Password security & control Panel Lock
- Includes soft carry case and remote control
- 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement



NEW

BONUS

\$1799

V3928 | RENT \$16.32/wk*



PJ503D

ViewSonic

- DLP technology
- SVGA resolution (800 x 600)
- 1500 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 2.6 kgs
- 3 years warranty

HOT PRICE



\$599

V2918 | RENT \$5.42/wk*



PJ556D

ViewSonic

- DLP technology
- XGA resolution (1024 x 768)
- 2000 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 2.7 kgs
- Built-in speaker
- 3 years warranty



\$899

V2921 | RENT \$8.14/wk*



*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. *Purchase any of these Toshiba projectors between 01/02/08 and 29/02/08 and receive a bonus projector screen via redemption. Visit the Toshiba promotions website, www.isd.toshiba.com.au/redemption/r_index.asp for details on how to claim as well as full terms and conditions.

TDP-T9

- DLP technology
- XGA resolution (1024 x 768)
- 2000 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 2 kgs
- Password security & control Panel Lock

TOSHIBA

- ECO Mode: reduces noise and extends lamp life
- Includes soft carry case and remote control
- 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement



\$1199

T6349 | RENT \$10.86/wk*



BONUS

BENEFITS OF DLP TECHNOLOGY

- Higher contrast ratio's increase the visibility of fine detail in dark areas
- No visible flyscreen effect results in a smooth, uninterrupted image
- DLP projectors are often preferred for displaying video

BONUS 84" PROJECTOR SCREEN ON TOSHIBA PROJECTORS

P1265

- DLP technology
- XGA resolution (1024 x 768)
- 2400 ANSI Lumens
- 2000:1 contrast ratio
- Compact 2.0kg
- 2 years limited warranty

acer

NEW



\$1299

V2860 | RENT \$11.77/wk*



TDP-T45

- DLP Technology
- XGA resolution (1024 x 768)
- 2500 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 3 kgs
- Operation noise: ECO mode (31db)

TOSHIBA

- Integrated speakers
- Includes soft case and remote
- Warranty: 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement



\$1699

| T8919 | RENT \$15.41/wk*

BONUS

PD-323

ULTRA LIGHT

acer

- DLP technology
- XGA resolution (1024 x 768)
- 1600 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 1.3kg
- Includes remote control
- 2 years limited warranty



\$1829

U5034 | RENT \$16.64/wk*

TDP-T350

- DLP technology
- XGA resolution (1024 x 768)
- 3500 ANSI-lumens
- 2000:1 contrast ratio
- 4.9kg
- Includes soft carry case and remote control

TOSHIBA

- 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement



\$2699

V3909 | RENT \$23.55/wk*

BONUS

iPAQ 112 Classic Handheld



- Thin & elegant- just over 13mm thin and under 114.6g
- 3.5" touch screen display
- Powerful processor- Windows Mobile 6 Classic OS
- Rubberised back finish lets your device sit securely in your hand



\$399 | V1378

XDA Zinc

3G enabled device with QWERTY keypad. It also comes with a fast 520MHz Intel Processor and is packed with O2 exclusive applications like O2 Message Plus; a single interface to manage sms, mms, emails and news feeds easily.



SAVE \$100

\$899 | U5787 | RENT \$8.14/wk*

XDA Flame

First PDA-phone to boast a dedicated NVIDIA graphics processor in addition to a 520MHz Intel processor for flicker-free movies, videos and a smoother gaming experience. The crystal clear 3.6" screen is great for watching movies, and there's 2GB memory expandable by micro SD card slot for all the movie and game files. It's also got TV out connection for wide screen enjoyment, USB On-the-go for the device to read USB drives.



SAVE \$100

\$1309 | U5789 | RENT \$11.87/wk*

Tungsten TX



- Palm OS® Garnet 5.4
- 100MB accessible memory
- 320 x 480 transfective TFT touchscreen with support for over 65,000 colours
- Landscape and portrait orientation modes
- Bluetooth™ 1.1 wireless technology



\$499 | T0850

Treo 680 Smartphone



- Palm OS® 5.4.9
- 64MB non-volatile flash memory available for user storage
- 320 x 320 pixel TFT touchscreen with support for over 65,000 colours
- Bluetooth™ 1.2 wireless technology
- Digital camera with 2x digital zoom
- Video capture with 352 x 288 pixel resolution
- Full QWERTY key layout with backlighting
- Talk time up to 4 hours or Standby time up to 300 hours



SAVE \$50

\$749 | U4259 | RENT \$6.78/wk*

Treo 750 Smartphone



- Microsoft Windows® Mobile 5. Upgradable to Windows® Mobile 6.0
- Microsoft Office® Word, Excel, PowerPoint and PDF Viewer
- Voice command for speed dialling or calendar access
- Built-in Bluetooth™ wireless technology
- 1.3 megapixel digital video camera
- 128MB memory
- Windows® Media Player for music and video



SAVE \$100

\$899 OUTRIGHT | U7664

\$0 UPFRONT on a \$80 Telstra Business Phone Plan over 24 months¹

Touch Series II Smartphone



- Windows 6.0 Professional with direct push email and HTML email support
- Intuitive TouchFLO™ screen technology for finger and stylus input
- Simple user interface for quick dialling, navigation and launching applications
- Enjoy music and movie clips with HTC's Audio Manager and Windows Media® Player



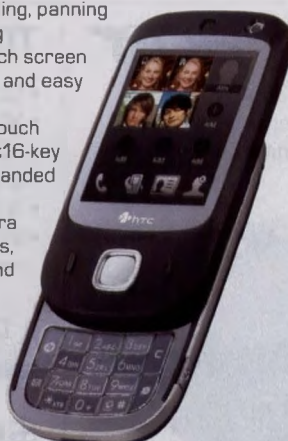
Touch series II - ROM: 256MB / SDRAM 128MB DDR

\$699 | V4446 | RENT \$6.33/wk*

Touch Dual 3G



- Finger-touch scrolling, panning and photo zooming
- Interactive 3D touch screen interface for quick and easy navigation
- Choose between touch screen or slide out 16-key keypad for single-handed typing
- 2 megapixel camera for shooting photos, videos and a second camera for video calls
- Windows Mobile® 6 Professional with Direct Push Outlook® e-mail



\$999 | V3139 | RENT \$9.05/wk*

TyTN II 3G PDA/GPS



- Worldwide connectivity
- Windows Mobile® 6 Professional
- Unique tilting touch screen and slide-out QWERTY keyboard
- Built-in GPS navigation
- Built-in 3 megapixel camera with auto focus



\$1399 | V3140 | RENT \$12.69/wk*

* For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. ¹Minimum package cost on the \$30 Telstra Business Phone Plan is \$720.

GPS DEVICES

S30 3.5" GPS



- Pocket sized, intelligent design
- Safe, easy to use menu
- 3.5" anti-glare touch screen
- Preloaded speed and red light camera alerts
- The latest comprehensive maps for Australia
- 2 year warranty



\$349 | V1308

S50 4.3"

Widescreen GPS



- 4.3" anti-glare touch screen
- Bluetooth hands-free capabilities
- Preloaded speed and red light camera alerts
- The latest comprehensive maps for Australia
- 2 year warranty on all items in the box
- PIN security code anti-theft deterrent



\$439 | V2787

S90i 4.3"

Widescreen GPS



- 4.3" anti-glare touch screen
- Bluetooth hands-free capabilities
- Text-to-Speech that reads out street names
- 2 megapixel NavPix camera
- Preloaded speed and red light camera alerts
- Traffic antenna for future live traffic services
- The latest comprehensive maps for Australia
- 2 year warranty on all items in the box
- PIN security code anti-theft deterrent



\$599 | V1313 | RENT \$5.88/wk*

ONE 3rd Edition



- Highly sensitive GPS chipset
- 3.5" full colour TFT LCD touchscreen
- 512MB memory
- Internal Lithium-Ion battery (2 hours operation)



\$369 | V2279

ONE XL



- Large 4.3" high quality touchscreen
- Built-in Bluetooth® technology
- Easy-to-use navigation
- Portable, light and easy to handle
- Fast route calculation & re-routing for roadblocks
- Large choice of routes: including quickest, shortest and avoiding toll roads and congestion areas
- Crystal clear 3D or 2D graphics for perfect viewing day and night
- Compass Mode displays for better orientation



\$499 | U8359

G0720 GPS



- 4.3" widescreen 16:9 format LCD
- CPU 400MHz, 64MB RAM
- 512MB internal flash memory
- SD card socket
- High sensitivity GPS receiver
- Integrated FM transmitter
- Battery lithium-polymer (up to 5 hours operation)
- Optimised integrated microphones and speaker for high quality hands-free functionality



\$629 | V0788 | RENT \$6.33/wk*

SL350D GPS Navigator



- Anti-theft 6 digit PIN number security
- Sensus Whereis V14 Deluxe map (including fixed red light camera, speed camera and school zone warnings)
- FM transmitter
- On-board Map File Updater



\$269 | V4099

iPAQ 312 Travel Companion



- Feast your eyes on richly detailed 3D maps. Together with HP Online Trip Planning services, getting to where you want to go has never been more richly rewarding
- Eye-popping visuals. High-definition 4.3" (800x480 pixel) touch screen display provides full DVD-quality resolution for spectacular visibility
- Flexible connectivity. Connect to a multitude of compatible peripherals such as headsets and keyboards with integrated Bluetooth
- Premium entertainment. Play all your music, videos and photos in DVD-like quality. Also enjoy comfortable viewing in your automobile with the included premium car kit.



\$499 | V1422

\$40 Telstra Business Phone Plan is \$960, \$60 Telstra Business Mobile Phone Plan is \$1,440, \$80 Telstra Business Mobile is \$1,920 (for phone and service). Extra usage (incl. data & content) charges are additional. Early termination charges may apply. ABN required.

GET UP TO \$299 REBATE PLUS HALF-PRICE WIRELESS ACCESS FOR SIX MONTHS ON A 36-MONTH PLAN¹

With the Next G™ Network, BigPond® offers wireless broadband speeds to 98% of the Australian population, so it's easy for you to access the internet from home, in the office or on the road. Ask in-store about coverage in your area.



Wireless Mobile Card
\$299 | U8552



Wireless USB Mobile Card
\$299 | U8553



Wireless Modem
\$249 | U8551

V24W WiFi Phone

- Connect anywhere in the world where there is WiFi access
- Make low cost VoIP and Skype calls without paying mobile carrier data rates
- SIP, Skype, Web Browser and MSN Messenger all in one sleek handset
- 10 WiFi Profiles
- Uses existing VoIP/Skype/MSN addressbook
- Receive live video from IP Camera
- Up to 60 hours standby/3 hours talk time



NetComm®

NEW

\$583 | V4975 | RENT \$5.28/wk*

DSS7960+1 Dual Line Phone

- Premium 5.8GHz Digital Spread Spectrum Phone System
- Advanced LCD and caller ID display
- Multi handset capable (up to 10)
- Distinctive caller ID indicators
- Digital duplex speakerphone on handset
- Downloadable/preset picture display



Uniden
SOUNDS BETTER

5.8 DIGITAL

DUAL LINES

SAVE \$20

\$249 | U4664

CORDLESS PHONES

Uniden
SOUNDS BETTER

Uniden WDECT 3300 Series

WDECT
WIDEBAND DIGITAL



WDECT3315

WDECT Technology
Multi 4 handset capabilities
Advanced Alpha ID Display
Two-way communications
Digital duplex speakerphone
1 Handset

\$76 | U9317

WDECT3315+1

WDECT Technology
Multi 4 handset capabilities
Advanced Alpha ID Display
Two-way communications
Digital duplex speakerphone
2 Handset

\$99 | U9318

WDECT3355

WDECT Technology
Multi 4 handset capabilities
Advanced Alpha ID Display
Two-way communications
Digital duplex speakerphone
1 Handset
Answering Machine

\$99 | U9320

WDECT3355+1

WDECT Technology
Multi 4 handset capabilities
Advanced Alpha ID Display
Two-way communications
Digital duplex speakerphone
2 Handsets
Answering Machine

\$142 | U9319

WDECT3355+2

WDECT Technology
Multi 4 handset capabilities
Advanced Alpha ID Display
Two-way communications
Digital duplex speakerphone
3 Handsets
Answering Machine

\$189 | U9321

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. ¹See www.bigpond.com/wirelessrebate for details. Incompatible with most other Telstra offers (incl Telstra Reward Options). One discount per new BigPond Next G™ wireless broadband service. No further discounts for customers cancelling their home phone. Wireless broadband & eligible home phone services must be on same account. Min. cost with wireless 7.2 mobile card over 36 months with Homeline® Plus

VoiceBox 3102

- Have you got broadband?
- Want 10 cent phone calls Australia wide?
- Want the option to use your existing phone number?
- Have a home or office phone?

This product allows you all of the above plus includes an in-built router should you need one

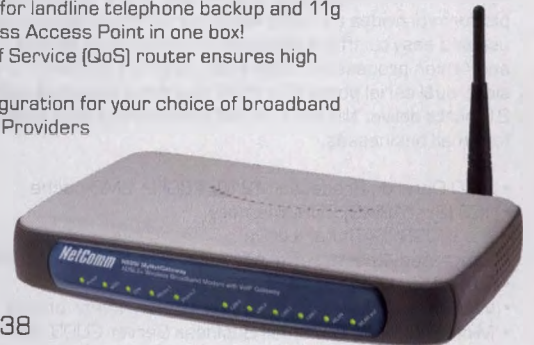


\$129 | U9016

NB9W Wireless MyNet Gateway

NetComm

- All your broadband Internet needs in one device
- Features ADSL2+ modem, 4 port QoS router, 2x FXS (VoIP) ports, 1 x FXO line port for landline telephone backup and 11g (54Mbps) Wireless Access Point in one box!
- Layer 3 Quality of Service (QoS) router ensures high quality VoIP calls
- Web-based configuration for your choice of broadband and VoIP Service Providers



\$249 | T3138

V85 VoIP Desktop Phone

NetComm

- The ideal SOHO/Small business workstation IP Phone
- Built-in PC port can connect the phone and a computer using the one network port



\$169 | 35010

SPH200D Dual-Mode Cordless Phone

NETGEAR

- Make Free Skype calls to other Skype users without a PC
- Use SkypeOut to make long distance calls for pennies and minute and no monthly fees



\$259 | U8072

CIT200 Cordless Internet Telephony Kit

LINKSYS
A Division of Cisco Systems, Inc.

- Skype convenience
- USB base station connects to your PC and puts your Skype contact list on the handset's screen



\$99 | T3126

VoIP Conferencing C100S

POLYCOM

- Easy to use and perfect for business communications giving you the ultimate hands-free Skype experience
- Based on the same technology used in Polycom's legendary line of triangular SoundStation conference phones



\$229 | U6436

Uniden DSS7900 Series



PREMIUM 5.8 DIGITAL SPREAD SPECTRUM
SAVE \$20

DSS7915+1

5.8GHz Digital
Multi 10 handset capabilities
WiFi Network Friendly
Optimum Clarity & Security
2 Handsets

\$171 | U9323

DSS7955

5.8GHz Digital
Multi 10 handset capabilities
WiFi Network Friendly
Optimum Clarity & Security
1 Handset
Integrated Digital Answering Machine

\$159 | U9324

DSS7955+1

5.8GHz Digital
Multi 10 handset capabilities
WiFi Network Friendly
Optimum Clarity & Security
2 Handsets
Integrated Digital Answering Machine

\$219 | U9325

DSS7955+1WP

5.8GHz Digital
Multi 10 handset capabilities
WiFi Network Friendly
Optimum Clarity & Security
2 Handsets
Integrated Digital Answering Machine
100% Water and Dust Proof Additional Handset

\$256 | U9327

DSS7955+2

5.8GHz Digital
Multi 10 handset capabilities
WiFi Network Friendly
Optimum Clarity & Security
3 Handsets
Integrated Digital Answering Machine

\$246 | U9326

& a G Fast 10-hour plan is \$2381.52 with rebate. Rebate is \$249 for wireless modem & \$299 for mobile card. Customers purchasing in-store must complete an approved form by 28/3/08. Rebate applied by your second bill or within 90 days of Telstra receiving valid completed form.



invent

SERVER SOLUTIONS FOR UP TO 10 USERS

ProLiant ML115 Small Business Server Standard Bundle

The HP ProLiant 100 Series servers have tailored features to meet the specific usage needs of small businesses and remote or unmanaged sites. This powerful yet simple platform provides all the relevant server features in an easy-to-use and easy to afford package. Features, such as AMD Opteron and Athlon processors, DDR II ECC memory, PCI and PCI-Express slots, dual serial ports, four hard disk drive bays, and eight USB 2.0 ports deliver the off-the-shelf functionality with expandability for small businesses.

- AMD Opteron Processor 1210, 1.8GHz, 2MB cache
- 1GB (2 x 512MB) DDR2 memory
- 2 x 160GB* SATA hard drive
- Integrated 4 ports serial ATA controller with embedded RAID
- Embedded NC320i PCIe Gigabit NIC
- Warranty - 3 years parts, 1 year labour, 1 year on-site
- Microsoft Windows Small Business Server 2003 - Standard Edition R2

\$999 | U7946 | RENT \$9.05/wk*

Also Available:

ML110G4 925 1GB 2x160GB SBS Standard Bundle | U9881 | \$1249 | RENT \$11.31/wk*



HOT PRICE

ML150G3 E5310 with SBS Standard Edition & DAT160 Bundle

- Quad core Intel Xeon E5310 processor (1.6GHz, 1066FSB)
- 1GB fully buffered DIMM
- 2 x 36GB 15K SAS 3.5" hot plug hard drive
- 8 internal port SAS host bus adapter with RAID embedded
- NC7781 gigabit server adapter 10/100/1000 WOL NIC
- StorageWorks DAT 160 tape drive
- Microsoft Small Business Server Standard Edition R2

\$3295 | V4344
RENT \$28.60/wk*

ML150G3 E5310 QC 2GB 2x36GB15K RAID1 NIC + DAT160 + Microsoft SBS prem. | V4346 | \$4995 | RENT \$40.27/wk*



SERVER SOLUTIONS FOR 10-25 USERS

ML350T05 5310 SBS Standard Bundle

- Quad Core Intel 5310 Processor (1.6GHz, 1066 FSB)
- 2GB Memory
- 2 x 72GB 15k LFF SAS HDD's
- DVD
- Redundant Power Supply
- iLo Advanced
- Microsoft Windows 2003 Small Business Server Standard Edition

\$3995
V1282 | RENT \$33.59/wk*

Also Available:

ML350T05 5310 SBS Premium Bundle | V1281 | \$5895 | RENT \$47.52/wk*



ProLiant DL320s 3060 Server

- Dual-Core Intel Xeon processor 3060 (2.40 GHz, 65 watts, 1066 FSB)
- Cache memory 4MB L2 cache
- Intel 3010 chipset
- 1 GB (standard) to 8 GB (maximum) of advanced ECC PC2-5300 UB DDR2 SDRAM Memory
- Embedded NC324i PCIe dual port gigabit server adapter
- HP Smart Array P400/256MB controller (RAID 0/1/5/6) (occupies x8 slot)
- NOTE: Includes BBWC.
- No HDDs
- Maximum internal storage = 10.5TB SATA, 2.4TB SAS
- No optical drive or diskette drive
- Rack (2U)

\$1995 | U4374 | RENT \$18.10/wk*



HOT PRICE

SERVER SOLUTIONS FOR 25-100 USERS

DL360G5 5160 2G Performance AP Server

- ProLiant DL360 Generation 5
- (2) Dual-Core Intel Xeon 5160 processor (3.00GHz, 1333 FSB) - 4MB (1 x 4MB) Level 2 cache
- 2GB (2 x 1GB) standard; PC2-5300 fully buffered DIMMs (DDR2-667)
- Embedded dual NC373i multifunction gigabit NICs
- Smart array P400i controller with 256MB battery-backed write cache (BBWC)
- (RAID 0/1/5/6)
- No drives included
- Slimline DVD/CD-RW combo drive
- 2) 700W power supplies
- Rack (1U) form factor

\$6600
U4836 | RENT \$50.70/wk*

Also Available:

ML350T05 5310 SBS Premium Bundle | U4846 | \$6799 | RENT \$52.23/wk*



HOT PRICE

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term.



DAT TAPE DRIVES

Affordable and reliable backup for entry-level servers and workstations

- Capacities up to 160GB of compressed data per cartridge
- Proven track record for dependable backup
- Remarkably low media prices contribute to a very low cost of ownership

DAT72 USB External Drive

Protect your small or medium business, remote office or workgroup with the HP StorageWorks DAT 72 USB Tape Drive providing a balance of price and performance with up to 72GB of compressed data on a single cartridge at speeds of up to 23GB/hr (assuming 2:1 data compression). Up to 36 GB native capacity on a single tape - 72 GB at 2:1 compression. Dependable disaster recovery - HP StorageWorks One-Button Disaster Recovery (OBDR) restores your entire system at the touch of a button. The USB 2.0 interface provides plug-and-play connectivity, enabling backup to be initiated from straight out-of-the-box in less than 60 seconds.

**FEB
SPECIAL**



\$799 | T3491 | RENT \$7.23/wk*

Also Available:

DAT72 USB Internal Tape Drive | S9628 | \$679 | RENT \$6.15/wk*

StorageWorks DAT 160 USB Internal Drive | V5038 | \$899 | RENT \$8.14/wk*

StorageWorks DAT 160 USB External Drive | V5039 | \$1099 | RENT \$9.95/wk*

ULTRIUM TAPE DRIVES

Based on LTO technology for highest capacity, performance and reliability

- Capacities up to 1.6TB of compressed data per tape
- Ideal for midrange and high-end servers
- Investment protection through two-generation backward read compatibility and a roadmap for future generations
- Choose from high-performance full-height or affordable half-height drives

StorageWorks Ultrium 232 SCSI External Tape Drive

The HP StorageWorks Ultrium 232 Tape Drive is one of the newest LTO1 drives on the market and the fastest in HP portfolio. This affordable superdrive delivers enterprise-class backup capacity, performance, and reliability at a midrange price. With a compressed capacity of 200 GB per data cartridge and a compressed data transfer rate of 115 GB per hour, this LTO1 drive is read- and write-compatible with all first-generation Ultrium tape drives and media, and its media can be read by any LTO1, 2, or 3 drive from any manufacturer.

**FEB
SPECIAL**



\$1999 | U5649 | RENT \$18.13/wk*

Also Available:

Ultrium 448 SCSI External Tape Drive | T6198 | \$2099 | RENT \$19.04/wk*

Ultrium 960 SCSI External Tape Drive | T7232 | \$2499 | RENT \$21.80/wk*

Ultrium 1840 SCSI External Tape Drive | V3146 | \$3799 | RENT \$32.60/wk*

STORAGE MEDIA

T1000 G2 UPS 1000VA 650W Serial USB

- Manageability through USB port
- Ease of configuration via enhanced front panel display
- Intelligent manageability with bundled Power Management software
- Long-term battery reliability with Enhanced Battery Management
- Hot-Swappable battery
- Enhanced system flexibility with independently controllable load segment
- Backed by a three-year warranty, with the first year including parts and labour



\$455 | U5222

Also Available:

UPS T1500 G2 IEC-320-C14 Internal USB | U2679 | \$699 | RENT \$6.33/wk*

StorageWorks DAT 72 Data Cartridge 72GB

\$19 | L2132

StorageWorks DAT 160 Data Cartridge 160GB

\$59 | V5041

Ultrium LTO Data Cartridge 100GB/200GB Compressed

\$49 | C3782

Ultrium LTO Data Cartridge C7972A 400GB

\$69 | H0334

Ultrium Data Cartridge 800GB

\$99 | S9158

LTO4 Ultrium 1.6TB RW Data Tape Media

\$196 | V2367



Netgear is the perfect choice for creating the complete networked home. With Netgear, you can:

- Share your internet connection with other members of your household while monitoring what content family members can access
- Back up all those important files and family memories
- Keep in contact with friends and family overseas
- Stream home movies, photos and music to your TV from your computer

Netgear's products for your home:



Wireless Broadband Router:
RangeMax NEXT ADSL 2+ Modem Router

WNR834B **\$239** | T7507

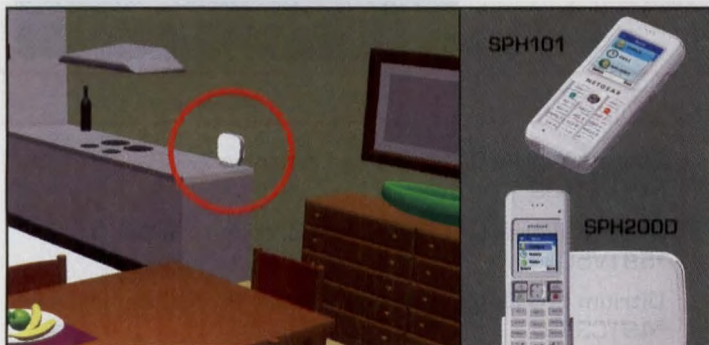
WNR854T **\$359** | U5282

DG834N **\$339** | T7509



Home Storage: Storage Central Turbo

SC101T **\$349** | U6714

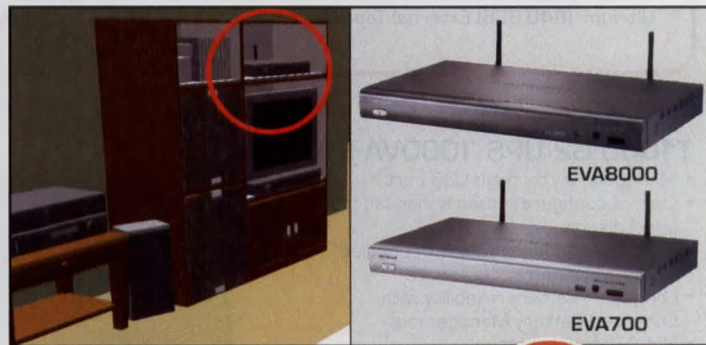


Skype WiFi Phone: Dual-mode cordless Phone with Skype

SPH101
\$149 | T7229

SPH200D
\$259 | U8072

HOT PRICE



Wireless Media Streaming: HD Digital Entertainer

EVA700
\$179 | U0637

EVA8000
\$599

U7492 RENT \$5.42/wk*

HOT PRICE

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term.

Business's are demanding solutions that give them:

- More reliable broadband link • Faster network speeds • Remote access
- Flexible connectivity in the office • More storage

Netgear offers solutions that address the needs of any size office.

SMALL OFFICE SOLUTION (up to 10 users)

GS716T - ProSafe™ 16 Port Gigabit Smart Switch

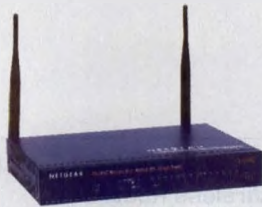


Delivers gigabit power plus key, easy-to-use management features via a web browser - at an unmanaged price.

\$528 | S7139

DGFV338 - ProSafe™ Wireless ADSL modem VPN Firewall Router

Combines 6 functions in a single, compact package. This affordable solution offers wired and wireless connectivity with business-class protection for small office users.



\$429 | U0582

RND4425 - ReadyNAS™ NV+ 1TB Gigabit Desktop Network Storage (4x250Gb)

With 4 Hot Swappable 250GB HDD in a small 8 inch high desktop design, ReadyNAS couples out of the box deployment and easy management with robust file serving and data redundancy.



\$1999 | U8794 | RENT \$18.13/wk*

MEDIUM OFFICE SOLUTION (up to 50 users)

GS748TS - ProSafe™ 48 Port Gigabit Stackable Smart Switches



Netgear ProSafe Gigabit Stackable Smart switches deliver scalability, performance and advanced features in an affordable package.

\$1799
U4731 | RENT \$16.32/wk*

WG302 - ProSafe™ Wireless 802.11g Access Point

Excellent value with leading-edge industry standard security and management features - powerful 802.11g wireless access to network resources, e-mail, and the Internet



\$389 | L8310

RND4210 - ReadyNAS™ NV+ 2TB Gigabit Desktop Network Storage (2 x 1Tb)

With the latest Hot Swappable 1Tb HDD in a small 8 inch high desktop design, ReadyNAS couples out of the box deployment and easy management with robust file serving and data redundancy.



\$3099
V5008 | RENT \$26.90/wk*

LARGE OFFICE SOLUTION (up to 500 users)

GSM7328S - ProSafe™ 24 port Layer 3 Managed Stackable Switch with 10Gig



Layer 3 stackable switches are perfect backbones, Gigabit servers, or as the core of an all-Gigabit network.

\$4099
T8479 | RENT \$34.46/wk*

WFS709TP - ProSafe™ Smart Wireless Controller



Smart wireless controller securely manages up to 256 users with IntelliFi RF management and ID-based security (purchase with a WGL102 for wireless connectivity).

\$3699
U9670 | RENT \$31.74/wk*

RNR4410 - ReadyNAS™ 1100 4Tb Dual Gigabit Rackmount Network Storage (4 x 1Tb)



The ultra efficient, rack-mountable, 1U Network Attached Storage (NAS) appliance is rich in features, including Gigabit Ethernet, hardware RAID, continuous system monitoring and effortless Active Directory integration.

\$6399
V4971 | RENT \$50.40/wk*

PROSAFE® Peace of mind from as little as \$59

Netgear's XPressHW provides basic hardware support and advanced next-business-day hardware replacement for customers who are seeking to protect their hardware investment. Includes Software Maintenance Release Notification.

All Netgear's ProSafe® products include a full lifetime hardware warranty.



DIR-300 Wireless G Router

The D-Link Wireless G Router supports dual SSID which provides an optional Public Access Wi-Fi Hotspot with Tomizone.

Tomizone enables any broadband connection anywhere to be shared as a revenue earning Wi-Fi or Wireless Hotspot in an international network. Tomizone is free of charge to activate and maintain and there is no need for additional hardware or billing systems.

Setup two wireless networks (one private and one Tomizone Public Hotspot) in minutes with the D-Link Quick Router Setup Wizard

- IEEE 802.11b/g compatible
- Share your internet with free Tomizone Hotspot
- Built-in 4 port switch

\$99 | V5010



DIR-615 Wireless N Router

- Share internet access with PCs, game consoles, and media players
- Parental controls to supervise internet activity
- Firewall protection for your network
- Backward compatible with 802.11g and 802.11b networks



\$199 | V2323

DIR-635 RangeBooster N 650 Wireless Router

- GoS engine and draft 802.11n technology for total network performance
- Active Firewall and WPA2™ to protect your network against outside intruders
- Provides greater wireless signal rates even at farther distances for best-in-class whole home coverage



\$249 | T9473

DIR-655 Xtreme N™ Gigabit Router

- Draft 802.11n speeds up to 14x faster than Wireless G
- Greater coverage for entire home or office
- Intelligent GoS technology for superior VoIP and online gaming
- Connect computers, game consoles, or media players to the web



\$289 | U5726

USE THESE NETWORK ADAPTORS TO GET THE BEST PERFORMANCE FROM YOUR D-LINK WIRELESS N ROUTER

DWA-645 RangeBooster N 650 Wireless LAN PCMCIA Card

\$139 | T9472

DWA-547 RangeBooster N 650 Wireless LAN PCI Adapter

\$139 | T9470

D-Link DWA-140 RangeBooster N USB Adaptor

\$139 | V5011

DWA-643 Xtreme N™ Notebook ExpressCard

- Draft 802.11n speeds up to 14x faster than Wireless G
- Wirelessly stream HD video, share files, and go online
- Get the maximum performance from your desktop adapter
- Connects to any standard PCI express (PCIe) slot



\$159 | V5012

DWA-556 Xtreme N™ PCI Express Desktop Adapter

\$159 | V2133

DSL-2740B RangeBooster N™ ADSL/ADSL2/2+ Modem Router

- Built-in ADSL/ADSL2/ADSL2+ modem
- Draft 802.11n wireless LAN specification, backward compatible with 802.11b/g devices
- Multiple SSIDs
- Up to 270Mbps raw data transfer rate
- Strong WPA/WPA2 data encryption security



\$389 | U6165

DSL-G604T Wireless G ADSL2/2+ Modem/Router

- ADSL2/2+ modem/router with 54Mbps wireless and built in 4 port switch
- Built-in SPI Firewall, DHCP Server
- 4 port fast Ethernet and 802.11g wireless connectivity



\$150 | P3062

DSL-G804V Wireless ADSL2/2+ VPN 4 Port Router

- Built-in ADSL interface
- Built-in 802.11g WLAN up to 54Mbps speed
- Integrated 4 port Ethernet switch
- 16 tunnel VPN



\$288 | T9474

Wireless G Adaptors

- Easily connect to your wireless network to get online from your desktop or notebook PC
- Works with 802.11g and 802.11b wireless networks
- Check e-mail, surf the web and chat with friends and family online

DWA-110 Wireless G USB Adapter

\$49 | V5013

DWA-510 Wireless G Desktop Adapter

\$39 | V5014

DWA-610 Wireless G Notebook Adapter

\$39 | V5015

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term.

DNS-323 2-Bay Network Storage Enclosure

- Secure and share your digital files
- Insert either one or two internal 3.5" SATA Hard drives without using any tools or attaching any cables
- Access stored files over the internet
- Protect your important files by making regular backups to mirrored hard drives using RAID 1 technology



\$389 | U4955

DNS-313 Single Bay SATA Network Storage Enclosure

NETWORK STORAGE SOLUTION FOR HOME

- Power management to conserve energy & extend life of hard drive
- Easy to use, manage by your web browser
- Operating system independent, no drivers required
- Up to 1,000GB of Storage

1-BAY SATA NETWORK STORAGE ENCLOSURE

The D-Link DNS-313 1-Bay SATA Network Storage Enclosure enables users at home to share files such as music, photos and videos across the network and on the Internet, so friends and family can access them. This device can also be used to stream music, photos and videos to UPnP™ Audio and Video (UPnP AV) compatible network media players. For a list of SATA drives that have been tested to work with the DNS-313, visit D-Link support web sites. Up to 1,000GB of Storage.



\$229 | V5002

DGS-3100-24 24 Port Managed Layer 2 Gigabit Switch

- Feature-rich, low-cost switch in the entry-level network management category
- 24 10/100/1000BASE-T Ports
- Up to 4 fiber links via combo SFP
- 10 Gigabit bi-directional stacking bandwidth



\$999 | V0677 | RENT \$9.05/wk*

DGS-3100-24P Managed L2 Gigabit Stackable Switch POE
\$2099 | RENT \$19.04/wk* | V0678

DGS-3100-48 48 Port Gigabit Switch with 4 Combo

- 48 10/100/1000Mbps ports
- Up to 4 fiber links via combo SFP
- Up to 20Gbps physical stacking ability
- Comprehensive network security, granular bandwidth control and extensive network management



\$2099 | V0793 | RENT \$19.04/wk*

DGS-3100-48P 48 Port Gigabit PoE Switch with 4 Combo
\$3159 | RENT \$27.42/wk* | V0862

DFL-260 UTM Firewall for SOHO

POWERFUL UNIFIED THREAT MANAGEMENT (UTM) FIREWALL FOR SOHO

- Integrated Firewall/VPN appliance
- Intrusion Prevention System (IPS)
- Anti-Virus (AV) protection
- Powerful hardware accelerator & VPN performance



\$1179 | V5016 | RENT \$10.68/wk*

DFL-210 NetDefend™ Security Firewall for SOHO
\$629 | RENT \$5.69/wk* | T8412

DFL-860 NetDefend UTM Firewall for SMB

POWERFUL UNIFIED THREAT MANAGEMENT (UTM) FIREWALL FOR SMALL BUSINESSES

- Integrated Firewall/VPN appliance
- Intrusion Prevention System (IPS)
- Anti-Virus (AV) protection
- Web Content Filtering (WCF)
- Proactive end-point security with D-Link ZoneDefense
- Powerful hardware accelerator & VPN performance



\$1799 | V5017 | RENT \$16.32/wk*

DFL-800 NetDefend™ Security Firewall for Small Business
\$1133 | RENT \$10.26/wk* | T8517

DFL-1600 Network Security Firewall for Enterprise Networks

The DFL-1600 Rackmount VPN Firewall is a powerful security solution that provides integrated Network Address Translation (NAT), SPI Firewall, advanced content filtering features, IDS protection, bandwidth management, as well as Virtual Private Network (VPN) support.

- Multi-function VPN/Firewall security solution
- 6 configurable gigabit ports for WAN, LAN, DMZ
- Manage up to 1200 VPN tunnels



\$5499 | U4533 | RENT \$44.33/wk*

DMA2200 Media Center Extender with DVD

The Linksys DMA2200 integrates the latest in 1080i upscaling DVD players with Windows Media Center and streams your digital music, movies and photos to any TV in your home without running wires. With elegant and easy-to-navigate menu screens, you can play DVDs, view family slide shows, browse your music collection by cover art, listen to entire playlists or choose from a vast selection of Internet Radio stations from all over the world.

- Access video, music, and photos from your Microsoft Windows Vista Media Center PC and stream it to your home entertainment system.
- Stream live TV content, movies, photos and music from your Media Center PC on your living room HDTV and surround sound system. Includes learning remote control.
- High speed, dual-band Wireless N enables you to stream content from virtually anywhere in your home.
- Built-in, Upscaling DVD-Video player (720p, 1080i and 1080p) for watch DVDs in high-definition on your HDTV. Playback your CD-Audio collection.



\$449 | V5035

DMA2100 Media Center Extender | \$359 V5043

SLM2005 5 Port Gigabit Smart Switch

COST-EFFECTIVE GIGABIT SWITCHING WITH ENTRY-LEVEL MANAGEMENT FOR SMALL BUSINESS

- 5 Gigabit Ethernet ports ideal for small workgroups moving large files
- Can obtain power from a standard 802.3af PoE switch or from an external AC power outlet
- Entry-level management at a cost-effective price point
- Easy to use Web browser interface make installation quick and easy



\$149 | V5044

SLM224P 24 port Gigabit Smart Switch 2 SFP & POE

COST-EFFECTIVE, SECURE SWITCHING WITH SIMPLIFIED MANAGEMENT AND POE FOR YOUR GROWING BUSINESS

- Easy-to-use Web browser interface makes installation
- Provides IEEE 802.3af PoE power to IP phones, surveillance cameras or aps
- 802.1X port authentication and MAC address filtering brings network security down to the switch port level
- Basic QoS enables the network to be used for networked applications including voice, video and data storage



\$629 | V5045 | RENT \$5.69/wk*

Linksys SLM248P 48-port Gigabit Smart Switch 2 SFP & POE | V5046 | \$1139 | RENT \$10.32/wk*

WVC200 Wireless G Pan/Tilt/Zoom Internet

FLEXIBLE REMOTE CONTROLLED WIRELESS VIDEO SOLUTION FOR YOUR SMALL BUSINESS

- Sends high-quality live video to your network wirelessly. Pan/tilt/zoom gives flexible control remotely from a web browser
- Capacity to view images even in low light environments
- Automatically sends email alerts with video clips upon motion detection
- Supports up to ten simultaneous remote users



\$359 | T9640

PVC2300 Business Internet Video Camera with Audio/PoE

HIGH QUALITY VIDEO SURVEILLANCE PLATFORM WITH POWER OVER ETHERNET PROVIDES FLEXIBLE INSTALLATION

- Box camera with PoE, interchangeable lenses, and IO ports allow for flexible installation for multiple applications
- High quality progressive CCD sensor with low light sensitivity and an IR Filter switcher provides optimal video image under multiple conditions
- Simultaneous dual CODEC provides optimal combination of viewing and storage of video



\$499 | V5022

WVC2300 Wireless G Business Internet Video Camera

HIGH QUALITY WIRELESS VIDEO SURVEILLANCE PLATFORM PROVIDES FLEXIBLE INSTALLATION

- Wireless Box camera with interchangeable lenses, and IO ports allow for flexible installation for multiple applications
- High quality CCD sensor with low light sensitivity and an IR Filter switcher provides optimal video image under multiple conditions
- Simultaneous dual CODEC provides optimal combination of viewing and storage of video



\$599 | V5021 | RENT \$5.42/wk*

*For terms and conditions, including RentSmart, see page 47. Rent prices based on 48 month term.

Network USB Hub

- Share up to 5 devices: multi-function printers, media readers, digital cameras and scanner on your network
- Back up and access data from networked attached storage (NAS) devices
- Play music from an MP3 player connected to a USB dock (using USB speakers)
- The industry's first reliable print server: Network USB Hub makes your computer think that printers and other devices on the network are directly attached to the computer.
- Works with existing wireless network— wireless router NOT included

\$229 | V2312



WHR-G54S Wireless G 125 Broadband Router & Switch

The Buffalo Wireless G High Speed Router and Access Point with High Gain Antenna combines the 125* High Speed Mode wireless performance with Buffalo's AirStation One-Touch Secure System™ (AOSS™).

Combined with Wireless G 125 High-Speed devices, WHR-G54S extends the range of standard 802.11g client devices by up to 2X and improves speed by up to 3X. This Smart Router automatically detects and configures your Cable or DSL internet connection. The combination of push-button wireless and internet setup and great value makes WHR-G54S the perfect choice for your network.

\$69 | V2951

BUFFALO



LinkStation EZ 250GB Network Hard Drive

- Auto-MDIX 10/100/1,000 Base-T gigabit Ethernet port
- Simplified sharing on your home or small office network
- High speed processor with serial ATA hard disk
- Access data from any Windows and Macintosh computer
- Simply run the Wizard and ready to use
- Memeo™ AutoBackup software for Windows* included

\$199 | V2954 INTRODUCTORY PRICE

TeraStation Pro II NAS 1TB Business Server Edition
\$1199 | RENT \$10.86/wk* | U5985

BUFFALO



ServerLink Slim 4 Port KVM Switch

SERVERLINK

- Control 2/4 computers from one keyboard, monitor and mouse
- Ideal for individual and SOHO use
- Hot-plugging of PC without powering down the KVM or PC
- Compatible with PS/2 style desktop and notebook PCs



\$99 | Q5543

Flip DVI-D (Dual-Link) BELKIN USB KVM with Audio

- Installs in 3 easy steps with no software required
- Includes cabling to connect your computers
- Supports PC notebook and desktop computers
- Full support for Windows 2000, 2003, XP, Vista and Linux
- Use one DVI-D monitor, USB keyboard and mouse between two computers
- Use one set of speakers between two computers



\$179 | V5026

Universal Series UPS Serial & USB with AVR - 800 VA

BELKIN

- Line-Interactive UPS with Automatic Voltage Regulation (AVR) technology
- Provides up to 45 minutes backup time
- Battery capacity load: 800VA (450 watts)
- Bulldog Plus shutdown software (compatible with Windows XP)
- Provides 4 sockets: 3 battery backup sockets with surge protection; 1 socket with surge protection only



\$369 | H9169

Cruzer Micro 4GB Flash Drive

SanDisk

- U3 smart™ technology gives you the ability to carry your files and your software on a secure USB drive
- Retractable USB port
- Enhanced for ReadyBoost if using Microsoft Windows Vista

SAVE \$15

\$39⁹⁵

| U8760



Cruzer Contour 4GB FlashDrive

SanDisk

- Innovative sliding USB connector that retracts into the body
- Enhanced for ReadyBoost™, improves system performance if using Windows Vista™
- U3 Smart enabled. Carry and launch your personal applications and settings on any PC



\$69⁹⁹

| U8756

Cruzer Titanium 4GB FlashDrive

SanDisk

- Rugged Liquidmetal® crush resistant casing 1000kg
- Enhanced for ReadyBoost™ if using Microsoft Windows Vista
- U3 smart™ technology gives you the ability to carry your files and your software on a secure USB drive



SAVE \$10

\$54⁹⁵

| U8762

Cruzer Micro 8GB USB FlashDrive

SanDisk

- Retractable USB connector
- Enhanced for ReadyBoost
- Brilliant amber LED
- U3 smart enabled



NEW LOW PRICE

\$99⁹⁵

| V2315

16GB FlashDrive

- Huge 16GB capacity
- Includes security zone software so you can partition the memory with a password to protect private data



HOT PRICE

\$229

| U8965

4GB Micro SD HC Card

SanDisk



\$59⁹⁵

| V0517

4GB SD HC Card & Reader

SanDisk



\$69⁹⁵

| U6287

2GB SD Card

SanDisk



HOT PRICE

\$29⁹⁵

| T3573

2GB 'Extreme III' SD Card

SanDisk



\$59⁹⁹

| U9419

*For terms and conditions see page 47.

PORTABLE HARD DRIVES

WD Western Digital



Western Digital Passport Portable Hard Drives

- Plug & play, built-in software loads directly from the drive
- Includes sync & encryption plus Google software
- PC and Mac compatible
- Powered by USB bus so no separate power supply needed
- Hi-Speed USB 2.0
- 5400RPM - 8MB buffer

320GB **\$279** BLACK ONLY | V3437

SAVE \$70

250GB **\$199** WHITE | V0969
BLACK | U9546
RED | V1049
PINK | V3848

SAVE \$50

160GB **\$149** WHITE | V1047
BLACK | U5600
RED | V1048
PINK | V3847

160GB TurboUSB Portable Hard Drive

BUFFALO

- High-speed 5,400rpm HDD
- Easy setup - no need to install drivers
- Supports USB 2.0
- Memeo™ auto backup software included



SAVE \$10

\$139 | V2139

Elements 120GB Portable Hard Drive

WD Western Digital

- Easy set-up
- Hi-speed USB 2.0 interface
- PC and Mac compatible
- USB Powered - no power adapter required (optional cable is available for computers that limit bus power)

HOT PRICE

**\$99** | V3850

My Book Premium II 2TB External Hard Drive



- RAID mirroring for extra data protection
- RAID striping for extraordinary capacity and performance
- Extraordinary capacity
- Small footprint design
- Triple interface
- WD Backup Software



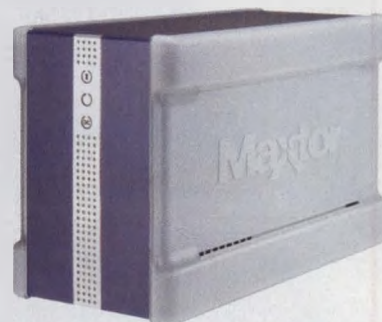
HOT PRICE

\$799 | V1164 | RENT \$7.23/wk*

Shared Storage II 1TB External Hard Drive



- Automated back up for photos, music, video and data on networked PCs and Macs to one location
- Automatic mirroring of 500GB data
- Access files from multiple PCs and Macs simultaneously
- Easy installation with automatic network configuration



\$549 | T9385

Elements 500GB External Hard Drive



- High-speed USB 2.0
- PC and MAC compatible
- Compact durable metal case



HOT PRICE

NEW

\$169 | V3853

500GB DriveStation with Turbo USB



- TurboUSB software for fast data transfer
- PC and Mac compatible
- Easy plug-and-play
- Secure and reliable backup and storage solution



SAVE \$40

\$189 | V2776

Essentials 320GB External Hard Drive



- Easy to use for add-on digital storage
- Fast USB 2.0
- PC and Mac Compatible
- Auto power on/off when you turn off your computer



NEW

\$149 | V4761

FreeAgent 500GB Desktop Drive



- 5 year limited warranty
- Just plug it in and you're ready to go
- USB 2.0 interface
- PC and Mac compatible



SAVE \$20

\$179 | U6876

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term.

OneTouch 4 Plus 1TB External Hard Drive

- Back up your files with a push of a button
- Dual Interface
- 7200 RPM, 16 MB cache buffer



Maxtor

NEW

\$499 | V2296

1TB d2 BigDisk Extreme with Triple Interface

- FireWire 800, FireWire 400, Hi-Speed USB 2.0
- Triple interface for universal connectivity on PC or Mac
- Built-in RAID 0 for Extreme FireWire 800 speed
- Shortcut button: launch any application in 1 push



LACIE

SAVE \$50

\$499 | V0700

500GB d2 Quadra External Hard Drive

- Quick & easy IP configuration
- Expandable capacity through a USB host port
- Users 7 share level permissions
- Jumbo Frame support



LACIE

SAVE \$50

\$299 | U5722

My Book World Edition II 1TB

- Unique remote-access storage system for wired or wireless networks
- Access and share data securely, in the office or anywhere in the world - even when your local computer is off
- Gigabit Ethernet connectivity



WD Western Digital

SAVE \$50

\$449 | U9550

Also available:

500GB | U7754 | \$199 | SAVE \$50

1.5TB | V1316 | \$649 | RENT \$5.88/wk* | SAVE \$50

My Book Home 500GB External Hard Drive

- Easy to set up, easy to use
- Automatic backup
- Capacity gauge
- Smart and energy efficient
- PC and Mac compatible



WD Western Digital

NEW

\$249 | V4230

My Book Essentials Edition II 1TB

- Easy to use
- Instant Storage
- SmartPower™
- Windows 2000/XP/Vista and Mac OS X 10.4.8 (or later) compatible
- USB 2.0



WD Western Digital

HOT PRICE

\$399 | V3265

SHREDDERS

P-45C Confetti Cut Shredder

- Designed for home office or occasional use
- Duty Cycle is 5 minutes on and 10 minutes off
- Sheet Capacity - 6 sheets
- Confetti Cut, with a shred size of 3.9 x 50mm
- Shred staples and credit cards
- Entry width is 229mm, with a bin capacity of 17 litres
- Warranty: 1 year



\$99 | V0569

DS1 Cross Cut Shredder with Safe Sense

- Shreds up to 11 sheets
- Safe sense technology - immediately stops shredding when touched
- Confetti cut particles for extra security
- Also shreds credit cards, staples and small paper clips
- Auto start/stop feature ensures quick, easy shredder operation



\$199 | V0533

Microshred High Security Shredder - MS450Cs

- Shreds your paper into pieces smaller than the length of a staple.
- Shreds CDs/Credit Cards/Staples/Paper Clips
- Cut Type: Microshred,
- Shred Size: 2mm x 8mm
- Sheet Capacity: 7
- Designed for: moderate use.
- Duty Cycle (min): 8-10 on / 15 off
- Entry Width: 230mm
- Bin Capacity (litres): 17



\$399 | V0537

7" Digital Photo Frame

- Start viewing your pictures and videos right away—just insert a memory card or connect your digital camera and enjoy
- A frame full of features: slide shows your way, thumbnails, copy, delete, and print



\$199 | V4650

Digital Photo Frame 10"

- This Kaiser Baas Digital Photo Frame has a 10.4" viewable screen area.
- Displays your photos in a 4:3 aspect ratio
- No distortion of original image.



\$349 | V1321

Kodak

Verbatim DVD+R Dual Layer IJ Print White 20Pk Spindle

\$66 | S8528

HOT PRICE

SAVE \$10



Verbatim

Imation 4.7GB 16x White Inkjet Printable 100Pk

\$59⁹⁵ DVD R - | U5933
DVD R+ | U5932



*For terms and conditions see page 47.

Slim Portable 8x DVD±RW

- USB bus-powered
- Stylish, Mobile design
- Double layer DVD technology with LightScribe
- Easy Media Creator Suite 9 burning software [Windows]
- LightScribe Labelling software [Windows]

**HOT
PRICE**

\$149 | V2283



LACIE

d2Next Lightscribe 20x DVD±R

- FireWire 800, FireWire 400 and USB2.0 interface
- Slim, sturdy, heat-dissipating design
- Lightscribe: design and etch custom, professional labels
- Record to DL DVD DVD±R, DVD DVD±RW & CD-R/RW
- Fan-free design

LACIE



**HOT
PRICE**

\$139 | V2267

DRXS70U Ultra-Slim External USB DVD Burner

- Multi Format Support Stylish Slim Design
- Extensive Windows Software Suite
- USB Interface Easy Plug and Play install
- Windows Vista Ready and MAC compatible
- New robust aluminium casing
- Ultra-light 440g

SONY

**LOW
PRICE**



\$199 | V0571

DVR-215 Internal 20x SATA DVD/CD Writer

- Speeds up to 20x SATA interface
- Precision recording technology
- Multi-format compatibility
- Available in black includes Nero 7 Essentials OEM Suite 1 Authoring

Pioneer



**SAVE
\$10**

\$49 | V4911

DVR-A12XL Multi-format DVD/CD Writer - Black

The Pioneer DVR-A12XL series drive boasts scintillating 18x write speeds on both DVD-R/+R media, and 10x burning on Dual/Double Layer media.

Pioneer



**SAVE
\$20**

\$59 | U5638

External DVD-RW 20X Super-Multi w/LightScribe

- Stylish and Technological Design
- Writemaster™ Technology Engine for the Best Performance
- Large Capacity Writing (up to 8.5GB)
- Light-scribe functions
- Interface: USB 2.0
- Live Update
- Buffer under Run Free Technology

SAMSUNG



**SAVE
\$20**

\$159 | V1489

KEYBOARDS

Bluetooth Laser Cordless Desktop

- MX5000
- The smart desktop that combines an LCD keyboard display, high-speed Bluetooth wireless hub with SecureConnect technology.
- Comes with innovative touch-sensitive media controls.

\$225 | T3579



Cordless Laser Desktop

- LX310
- High performance Laser Mouse
- Convenient one-touch keyboard controls
- Easy to use F-keys to instantly open applications, files or folders

\$79 | U8238



MULTIMEDIA

Voyager Bluetooth Headset System

- 510SL
- One headset for wireless communication in and out of office
- Desk phone adapter turns your office phone into a Bluetooth® phone
- Versatile headset for both office and Bluetooth® mobile phones
- Noise-Canceling microphone for clearer conversations
- WindSmart provides wind-noise reduction technology for optimal sound clarity

\$249 | V2910



Portable Bluetooth® Headset

- Audio 910
- One-touch toggling between Bluetooth® devices
- Answer and end calls remotely via the headset
- Foldable design for easy portability and storage
- Noise-canceling microphone
- Up to 6 hours talk time and 100 hours standby
- Convenient USB charging

\$129 | V0868



Quickcam Pro 9000

- Get more detail and clarity from Carl Zeiss optics with autofocus - your images stay razor sharp, even in close-ups
- True-to-life images thanks to HD quality and 8-megapixel photos (interpolated)
- RightLight 2 produces the best possible image, even in dim or back lighting

\$119 | V1411



Alto Connect - Notebook Stand

- Elevated notebook stand with built-in 4 port USB hub
- Improves your notebook comfort
- Hi-speed USB hub increases your connectivity
- Durable construction with rubber surface to secure your notebook

\$99 | V0551



*For terms and conditions see page 47.

Wave Cordless Desktop



- Wave-shaped contour of the keys comfortably cradles your fingers
- Curved layout lets you type with confidence and comfort
- Cushioned palm rest provides extra support
- Laser mouse delivers exceptional precision and control



\$149 | V0698

diNovo Media Bluetooth Laser Desktop



- Ultra-fast Bluetooth for an extended range of up to 20Mtrs, also allows you to share data with other Bluetooth® enabled devices
- Rechargeable MX Cordless Laser mouse
- Long Range Bluetooth MediaPad™ serves as a numeric pad, a calculator or a PC remote control

**SAVE
\$60**



\$269 | T3582

MICE

Bluetooth Cordless Laser Notebook Mouse



- V470
- Connects directly to Bluetooth-enabled notebooks without the need for a receiver
- Low-battery indicator eliminates surprises, while an on/off switch extends battery life
- Side-to-side scrolling plus zoom
- Protective travel pouch included



\$59⁹⁵ | V1818

MX Revolution Cordless Laser Mouse



- Logitech SmartShift™ Technology
- Revolutionary hyper-fast scroll wheel
- Rechargeable Li-Ion battery
- Precision laser tracking



**SAVE
\$30**

\$99 | T9986

Cordless Laser Mouse for Notebooks



- V450
- Precision laser tracking
- 2.4GHz digital cordless technology
- Micro-receiver stores neatly inside mouse
- Tilt wheel plus zoom for side-to-side, up/down scrolling and in/out zooming



\$59⁹⁵ | U0117

Cordless 2.4GHz Presenter



- Easy-set LCD timer gives automatic, inaudible warnings at 5 and 2 minutes remaining
- Extended 50-foot range lets you move around with confidence
- Battery life of up to six months
- Convenient on/off switch for total control

**HOT
PRICE**



\$79 | S8331



Visual Studio 2008 Professional Edition

Visual Studio 2008 Professional is a comprehensive development environment intended for individual developers to build high-performance, multi-tier applications.

- Both Microsoft Expression Web (ASP.NET) and Microsoft Expression Blend™ (Windows Presentation Foundation) are supported
- Powerful unit testing tools are now integrated directly into Visual Studio 2008 Professional Edition
- Now you can use one tool - Visual Studio 2008 and build applications that work with .NET Framework versions 2.0, 3.0 and 3.5
- Visual Studio 2008 Professional now includes Tools for Office development

\$1387 | FULL | V4896

\$945 | UPGRADE | V4897



Visual Studio 2008 Professional Edition with MSDN Professional

Comprehensive access to Microsoft tools and technologies enable teams to confidently design, develop and test software solutions; professional support services and expert information resources ensure Developers can rise to the biggest challenges.

- Visual Studio 2008 Professional
- Previous versions of Visual Studio
- Visual Studio Tools for Office
- Visual SourceSafe
- Microsoft Operating Systems
- MSDN Library
- Technical support incidents
- SQL Server
- Microsoft Dynamics

\$2084 | FULL | V4894

\$1391 | RENEWAL | V4895



Can my PC run Vista?

Go to <http://www.microsoft.com/windows/products/windowsvista/buyorupgrade/upgradeadvisor.mspx> to test your PC



Windows Vista Home Premium

- Enjoy the visually compelling Windows Aero desktop experience with Flip 3D navigation
- Enjoy a completely immersive home entertainment experience with Windows Media Centre.
- Edit High Definition home movies with Windows Movie Maker
- Assign key commands to simple pen gestures with Windows Tablet Technology
- Keep children safer online with customisable Parental Controls

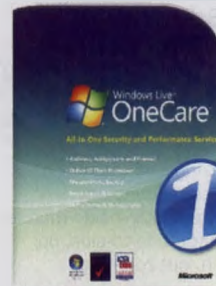
Upgrade from previous editions of Windows XP and Windows 2000

\$165 | UPGRADE ACADEMIC² | U4502

BONUS \$75 In-home Upgrade Support Voucher¹

\$405 | FULL | U4500

BONUS \$75 In-home Upgrade Support Voucher¹



Microsoft

Windows Live OneCare 2.0

Windows Live OneCare gives an all-in-one, automatic and self-updating PC Care service, complete with; Anti-Virus, Anti-Spyware, Firewall, Online ID Theft Protection, File and Photo Back-up, PC Performance Tune-ups, Home Network Management.

\$74 | V4052

*For terms and conditions see page 47. ¹If you have purchased a retail version of Fully Packaged Windows Vista including Windows Vista Home Basic, Premium, Business or Ultimate between 15/01/08 and 30/06/08 you will receive \$75 toward upgrade support. Product loaded onto a purchased PC (OEM) or Volume Licensed Product is not



**\$30
CASHBACK³**

Office Home And Student 2007²

Includes Word, Excel, PowerPoint and OneNote

This software helps people easily create great-looking documents, worksheets and presentations, as well as manage notes and information at home.

\$169 | U1823

BEFORE CASHBACK YOU PAY \$199



**\$100
CASHBACK³**

Office Small Business 2007

Includes Word 2007, Excel 2007, PowerPoint 2007, Outlook 2007 with BCM, Publisher 2007.

\$589 | FULL | U1827

BEFORE CASHBACK YOU PAY \$689

\$335 | UPGRADE | U1828

BEFORE CASHBACK YOU PAY \$435

UP TO
**\$100
CASHBACK³**
BUY NOW



Office Standard 2007

Includes Word 2007, Excel 2007, PowerPoint 2007, Outlook 2007.

\$569 | FULL | U1825

BEFORE CASHBACK YOU PAY \$619

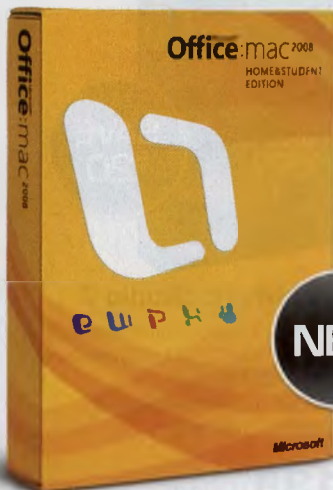
\$319 | UPGRADE | U1826

BEFORE CASHBACK YOU PAY \$369



Office Microsoft®

*Microsoft Office Home & Student - \$30 cash back. Office Standard, Standard Upgrade - \$50 cash back. Office Small Business, Small Business Upgrade, Office Professional, Professional Upgrade, Office Ultimate, Ultimate Upgrade - \$100 cash back. Does not include Office Professional Academic Edition or Office Standard Academic Edition. Offer valid from 01/01/08 till 29/02/08, claims must be received by 5pm 31/03/08. Photocopy of original receipt required. Maximum 3 claims per customer. See full Terms & Conditions at www.microsoft.com.au/officecashback for further details.



NEW

Office 2008 for Mac Home and Student

The perfect Office for families and students. Microsoft Office 2008 for Mac Home and Student Edition is more powerful and easier to use, helping you to achieve more and simplify your day, for less. New features, intuitive new look, Universal support, and compatibility with Office for Windows will unleash your productivity at a budget-friendly price.

\$229 | V4667

Office 2008 for Mac

Microsoft Office 2008 for Mac is more powerful and easier to use, helping you to achieve more and simplify your day. New features, intuitive new look, Universal support, and compatibility with Office for Windows will unleash your productivity.

\$649 | V4668



NEW

valid for this promotion. Please keep your original receipt. Go to www.microsoft.com.au/upgrademe for full terms and conditions. ²For non-commercial use only.

ADOBE CREATIVE SUITE 3

LATEST STUDENT VERSIONS FOR 2008.



\$419 | WIN | U7991
\$419 | MAC | U7992¹



\$279 | WIN | U7993
\$279 | MAC | U7994¹



\$282 | WIN | U8001
\$282 | MAC | U8002¹

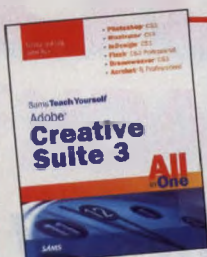


\$216 | WIN | U8003
\$216 | MAC | U8004¹



\$425 | WIN | U7999
\$399 | MAC | U8000¹

BONUS



Sams Teach Yourself
Adobe CS3 All in One Training Book +
Adobe Student Video Workshop DVD
valued at \$79.95

Offer is via redemption and available
from 01/02/08 - 30/04/08. See
adobe.ht.com.au for details.



Plus go into the draw to **WIN**
one of five 8GB iPod Nanos

when you take any Adobe Certified Associate exam between
01/02/08 and 30/04/08. For more information visit
www.intouch.com.au/adobe

Ulead Video Studio 11.5 Plus and Paintshop Pro Photo X2 Bundle

COREL

VideoStudio 11.5 Plus is video editing and DVD authoring software
for anyone who wants to easily produce professional-looking videos,
slideshows, and DVDs.

Paintshop Pro Photo X2
• Process photos like
the pros
• Edit easily using unique
tools
• Enhance photos with
powerful, easy-to-use
tools

\$199 | V4910



Vegas Movie Studio Platinum 8

SONY.

Ideal for producing high-quality movies, corporate
videos, wedding DVDs, and more.

- Import and edit support for HD Sony AVCHD
- 24 new DVD themes
- ATRAC editing and encoding
- Gracenote MusicID CD album recognition
- Import and edit DV, HDV, and other video formats
- 5.1 surround sound mixing and encoding
- Show Me How tutorials for interactive, step-by-step help

\$209 | U9445



Adobe

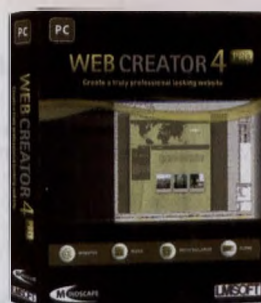
Photoshop Elements 6.0

Do it all with one powerful yet easy to use product

- Make your photos look their best with easy-to-use editing tools

\$139 | V3287

BONUS Photoshop Elements Training CD²



LMSOFT

Web Creator 4 Professional

- Vista-look templates with 3D effects and transparency
- Web page creation through easy drag and drop
- Automatic generation of pages in HTML and Javascript

\$99 | V4666



SONY.

ACID Music Studio 7

- Multitrack audio and MIDI recording
- Includes over 3,000 ACIDised loops and 1,000 MIDI files
- MIDI editing and sequencing
- Built-in CD burning

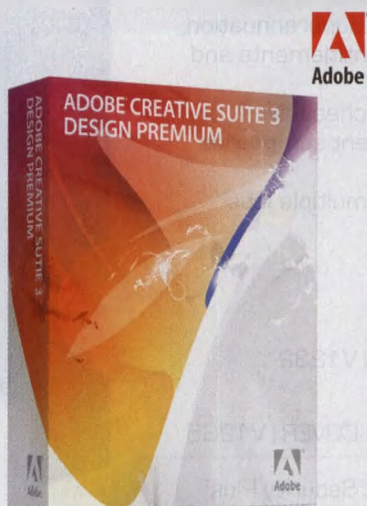
\$139 | U9448

*For terms and conditions see page 47. ¹Delivery Only. ²Bonus Photoshop Elements Training CD via redemption from Adobe between 05/12/07 and 29/02/08. See adobe.ht.com.au for more details.

CS3 Design Premium

Includes:

- InDesign CS3
- Photoshop CS3 Extended
- Illustrator CS3
- Flash CS3 Professional
- Dreamweaver CS3
- Acrobat 8 Professional
- Adobe Bridge CS3
- Version Cue CS3
- Adobe Device Central CS3
- Adobe Stock Photos Acrobat



\$2649 | WIN | U6349

\$2649 | MAC | U6348

CS3 Web Premium

A complete solution for creating interactive websites, applications, user interfaces, presentations, mobile device content, and other digital experiences.

Includes:

- Dreamweaver CS3
- Flash CS3 Professional
- Photoshop CS3 Extended
- Illustrator CS3
- Fireworks CS3
- Acrobat 8 Professional
- Contribute CS3



\$2389 | WIN | U6357

\$2389 | MAC | U6356

AutoCAD LT 2008 - New Seat

autodesk

Streamline your day-to-day tasks with AutoCAD LT® 2008 software, the world's number-one-selling 2D drafting and detailing product. Daily work is simpler thanks to tools built with the drafter in mind. Work smarter and minimise workarounds as you refine your precision with annotation scaling and layer properties per viewport, text and table enhancements, and multiple leaders.

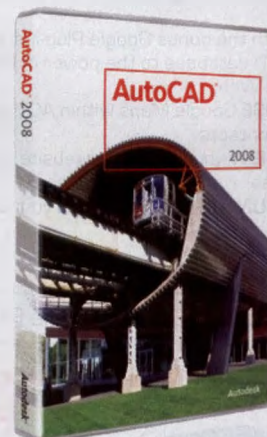


\$1989 | U5972

AutoCAD 2008 - New Seat

autodesk

Meticulously refined with the drafter in mind, AutoCAD 2008 propels day-to-day drafting forward with features that increase speed and accuracy while saving time. Annotation scaling and layer properties per viewport minimise workarounds, while text and table enhancements and multiple leaders help deliver an unmatched level of aesthetic precision and professionalism.

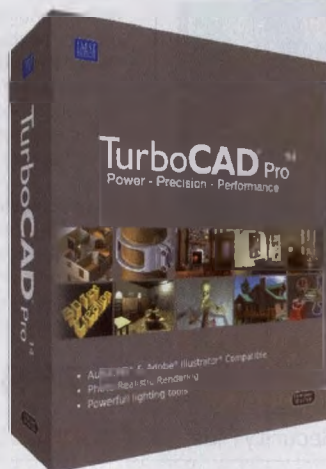


\$6759 | V3854

TurboCAD Professional 14 - Non Commercial

IMSI DESIGN

TurboCAD Pro 14 is a precision design solution that delivers unparalleled design productivity and dramatic visual results with integrated 2D drafting, 3D surface and solid modelling using the powerful ACIS solid modelling engine, and 3D photorealistic rendering. TurboCAD Pro is the most advanced CAD software in its price range.

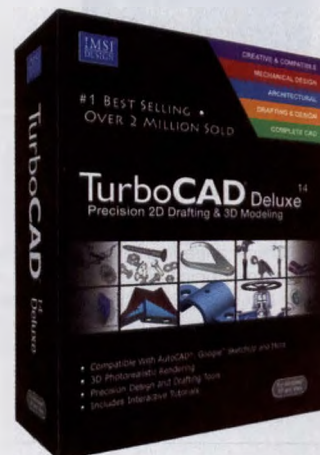


\$279 | U9411

TurboCAD Deluxe 14

IMSI DESIGN

TurboCAD Deluxe 14 is an all-purpose CAD program for all projects at home and at the office. Create precision 2D drawings, intricate 3D models, and utilise powerful Photorealistic rendering tools to accurately visualise and present your ideas. Includes millions of Symbols and 200+ 2D Training Lessons.



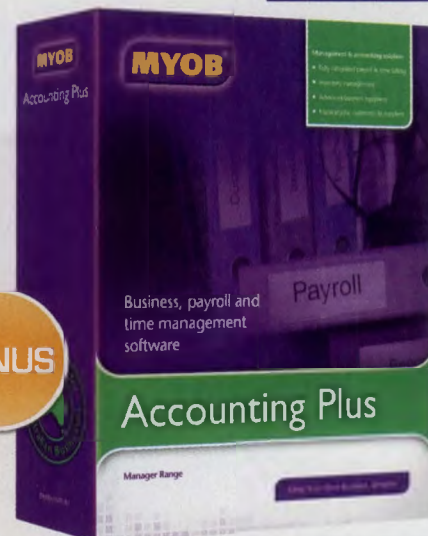
\$179 | U9413

MYOB Accounting Plus 17

- Calculates and tracks PAYG withholdings; long service, annual, holiday and sick leave; superannuation; and other employee entitlements and expenses
- Print payslips and paycheques
- Lodge pays and payment summaries electronically
- Allocate pay items to multiple jobs

\$479 | FULL | V1232
\$739 | WITH COVER | V1235

BONUS CA Internet Security Plus¹



MYOB Premier 11

- Manage even the most complex medium-sized business
- Get the complete set of business management features as found in MYOB Accounting Plus and also handle transactions and accounts in multiple currencies
- Multiple people can access your business information at the same time
- 1 year access to software support and upgrades

\$1329 | V1236

BONUS CA Internet Security Plus (3 copies) and a Belkin Surge Protector²



MYOB Accounting 17

- Streamline your accounts procedures with this integrated business and inventory management software for sole traders
- Have your ABN automatically entered on all necessary invoices and forms

\$285 | FULL | V1230

BONUS CA Internet Security Plus¹



MYOB RetailManager 10

- Fast sales processing
- Customise RetailManager to speed up your processes
- Complete inventory management - use serial numbers, barcode labels and packing slips to keep track of your stock
- Comprehensive reporting - use RetailManager to track and report on sales, profit, GST, suppliers, customers or staff

\$1759 | V3264

BONUS CA Internet Security Plus¹



ACT! by Sage 2008

Renowned for its ease of use, ACT! helps business professionals work better and smarter. With ACT! 2008, take advantage of:

- New interactive dashboards
- Compatibility with Office 2007 and Vista
- Direct integration with Outlook email

With the bonus Google Plug-ins, connect your ACT! database to the power of Google and the Web:

- **USE** Google Maps within ACT! to locate contacts
- **VIEW** your contact's website within an ACT! tab
- **RUN** a Google Search on your contact

\$242 | V1139

BONUS ACT! Google Plug-ins³

Includes Interface to MYOB and Quick Books



ELOoffice - Full Version

ELOoffice, a leading DMS for single users and small companies. ELOoffice stores and manages your Invoices, Emails, Word documents, Pictures, scanned documents etc and NOW all your MYOB or Quick Books documents

\$499 | U0897

*For terms and conditions see page 47. ¹Bonus CA Internet Security Plus via redemption from MYOB between 07/01/08 and 14/03/08. See myob.ht.com.au for more details. ²Bonus CA Internet Security Plus (3 copies) and a Belkin surge protector gold series 8 way via redemption from MYOB between 07/01/08 and 14/03/08. See myob.ht.com.au for more details. ³Bonus ACT! Google Plug-ins via redemption from Sage between 01/01/08 and 28/02/08. See act.ht.com.au for more details.

QuickBooks Plus 2007/08

Timesaving features and powerful functionality make this a must-have for efficiency-minded businesses. It's designed for businesses that track payroll.

- Integrated payroll management
- Track inventory
- Process credit card payments
- Import bank statements
- Track GST & BAS
- Keep track of your business with over 100 reports and graphs
- Compatible with Microsoft® Windows 2000/XP/Vista™
- 12 months free⁴ technical phone support and upgrades

\$349 | FULL | U5977

BEFORE CASHBACK YOU PAY \$499

BONUS 2GB USB Flash Drive⁴

+ BONUS Upgrade to QuickBooks 2008/09



Reckon

harristechnology

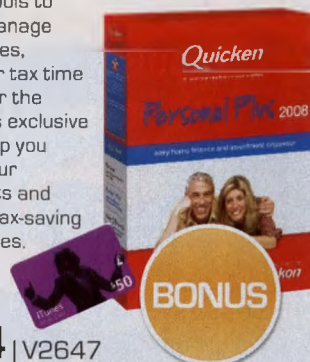


Quicken Personal Plus 2008

Provides tools to help you manage your finances, prepare for tax time and plan for the future, plus exclusive tools to help you manage your investments and maximise tax-saving opportunities.

\$174 | V2647

BONUS \$50 iTunes Music Card⁵



QuickBooks Pro 2007/08

- Time billing & job costing
- Integration with Microsoft® Office
- Integrated payroll management
- Track inventory
- Process credit card payments
- Keep track of your business with over 100 reports and graphs
- Compatible with Microsoft® Windows 2000/XP/Vista™
- 12 months free⁴ technical phone support and upgrades

\$549 | FULL | U5974

BEFORE CASHBACK YOU PAY \$749

BONUS 2GB USB Flash Drive⁴

+ BONUS Upgrade to QuickBooks 2008/09

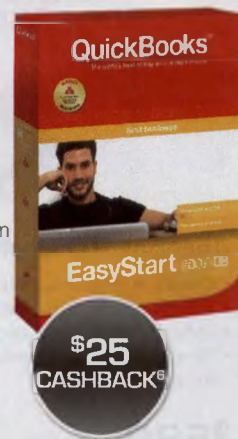


QuickBooks EasyStart 2007/08

- Track Sales and Expenses
- Manage GST and BAS
- Reconcile your bank account
- Extensive help menu available from within the software program
- Compatible with Microsoft® Windows 2000/XP/Vista™

\$90 | U5976

BEFORE CASHBACK YOU PAY \$115



QuickBooks Premier 2007/08

Industry-specific editions incorporate comprehensive tools to meet your specialised needs, with multi-user capability.

- Up to 3 simultaneous users (upgradeable to 5)
- Industry specific editions
- Time billing and job costing
- Integration with Microsoft® Office
- Integrated payroll management
- Track inventory
- Process credit card payments
- Keep track of your business with over 100 reports and graphs
- Compatible with Microsoft® Windows 2000/XP/Vista™

\$819 | U5978

BEFORE CASHBACK YOU PAY \$1219

BONUS 2GB USB Flash Drive⁴

+ BONUS Upgrade to QuickBooks 2008/09

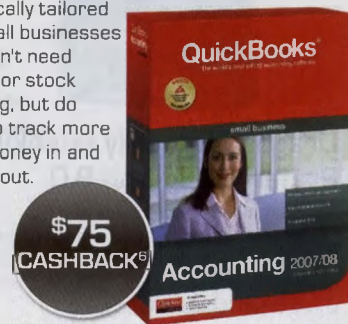


QuickBooks Accounting 2007/08

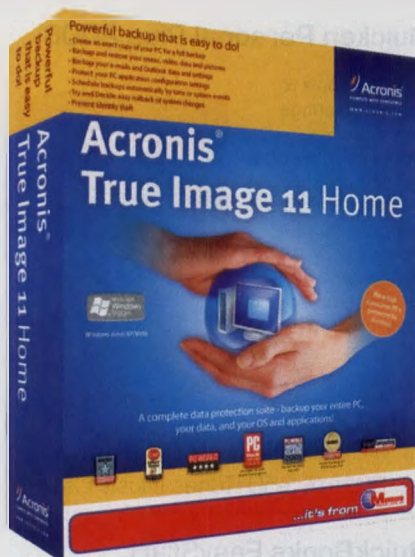
An effective software package specifically tailored for small businesses that don't need payroll or stock tracking, but do need to track more than money in and money out.

\$199 | U5975

BEFORE CASHBACK YOU PAY \$274



⁴Cashback offer and bonus 2GB USB flash drive via redemption from Quicken between 12/01/08 and 16/03/08. See quicken.ht.com.au for more details. ⁵Bonus \$50 iTunes Music Card between 01/11/2007 and 29/02/2008 via redemption from Quicken. See quicken.ht.com.au for full terms and conditions. ⁶Cashback offer via redemption from Quicken between 12/01/08 and 16/03/08. See quicken.ht.com.au for more details. ⁷See quicken.ht.com.au for more details.



True Image 11 Home

- Create an exact copy of your PC for a full backup
- Backup and restore your music, video, data and pictures
- Backup your emails and Outlook data and settings
- Protect your PC application configuration settings
- Schedule backups automatically by time or system events

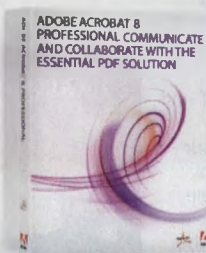
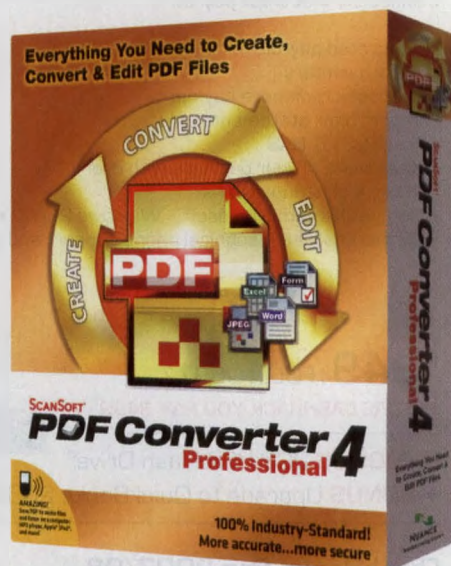
\$69 | V2998

PDF Converter Professional 4.0

PDF Converter Professional 4 is the complete PDF solution for business users, offering an unmatched combination of creation, editing and conversion features.



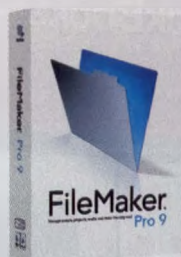
\$169 | U0137



Acrobat 8.0 Professional

- Create and optimise Adobe PDF documents
- Combine files from multiple applications
- Enhance and extend document collaboration
- Streamline data collection with Adobe PDF forms

\$589 | U1228



Filemaker Pro 9.0 Retail

- Create a database in minutes to track people, projects, assets and more.
- Customise screens with ease to work the way you do.

\$479 | U9549



SAVE \$10

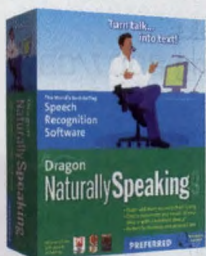


Easy Media Creator 10 Suite

- Convert audio and video files to the format of your choice right on your Windows Vista™ desktop
- Send videos to YouTube™ with one click
- Save tons of time by ripping CDs from multiple drives

\$149 | V3941

BONUS Sandisk 1GB USB Flash Drive¹



Dragon Naturally Speaking Preferred Edition 9.0

Gives small business users and PC enthusiasts the power to create documents, reports, e-mails and more - all by speaking! Fast, easy and amazingly accurate, it's over three times faster than typing.

\$329 | T9230



InterBase 2007 R2 Server

- High performance Embedded SQL database
- Easy installation and maintenance
- Automatic Crash Recovery and Data Protection
- Multi-Platform Support (inc Vista, Mac OS X)

\$293 | V4622



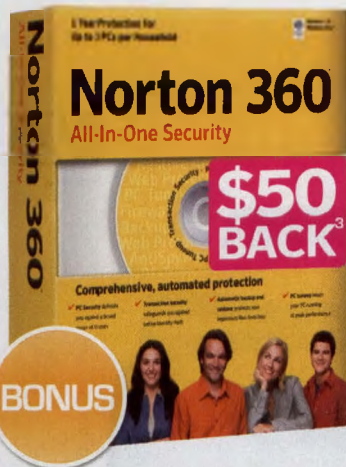
RAD Studio 2007 Professional New User

- Rapid development of native Windows and .NET applications
- Combines Delphi, Delphi for .NET and C++Builder
- Build AJAX powered websites with ASP.NET 2.0 and VCL for the Web
- Native development support for Microsoft Vista

\$1649 | V4605



*For terms and conditions see page 47. ¹Bonus Sandisk 1GB USB Flash Drive included in the product box. Bonus only available while stock last. ²Bonus 4 USB Port Hub included in the product box. Bonus only available while stock last. ³\$50 Cashback offer via redemption from Symantec between 03/01/08 to 29/02/08. See www.takethenortonchallenge.com for more details. ⁴Bonus 1GB Micro MP3 Player via redemption from Manacom between 01/02/08 to 31/03/08. See manacom.ht.com.au for more details. Bonus image for illustration purposes only. Actual product may differ in appearance.



Norton 360



Norton 360™ delivers all-in-one security for everything the computer users in your family care about. Easy to use, it provides automatic and transparent protection from viruses and spyware, fraudulent Web sites, phishing scams, hackers, identity theft, and more.

\$59 | 3 PCs | V3349
BEFORE CASHBACK YOU PAY \$109

BONUS 4 USB Port Hub²

ALSO AVAILABLE
\$169 | 5 PCs | U8186
\$299 | 10 PCs | U8187

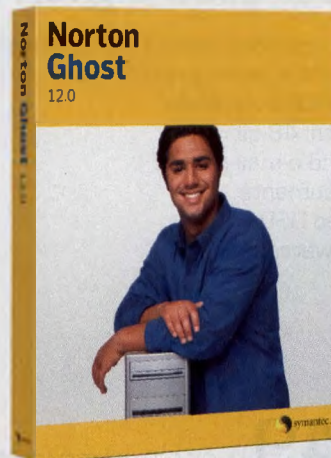
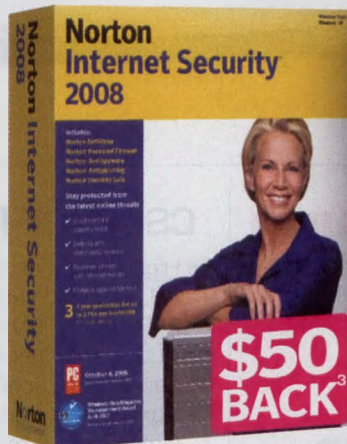
Norton Internet Security 2008

- Lighter. Faster. Friendlier.
- Uses 76% less memory than 2006 version
- Easy install & free, fast online help
- Full Protection: ID theft, viruses, spyware & more

PLUS Norton Save and Restore (with 2 PCs only)
Protect what you care about. Automatically back up and recover everything on your computer.

\$35 | 2 PCs | V1386
BEFORE CASHBACK YOU PAY \$85
INCLUDES NORTON SAVE AND RESTORE

ALSO AVAILABLE
\$89 | 3 PCs | V1385
\$125 | 5 PCs | V1387
\$209 | 10 PCs | V1388



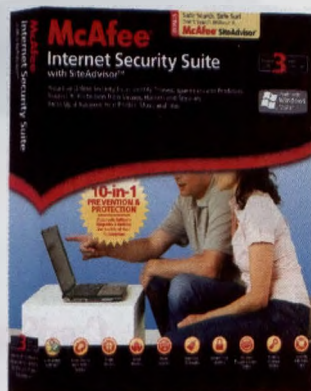
Norton Ghost 12.0



Save the stuff you care about.

- Creates full backups of your PCs contents
- Restores individual files or entire hard drive
- Monitors and optimises backup disk space
- Encrypts backups to help keep them secure

\$89 | U8834



McAfee

Internet Security Suite 2008

McAfee Internet Security Suite with SiteAdvisor is a proactive 10-in-1 always-updating security bundle that protects what you value with multiuser child safety, identity theft prevention, email and IM protection, and automated back-up.

\$79 | 3 USER | V1275 | **SAVE \$20**
\$115 | 5 USER | V1276 | **SAVE \$34**



KASPERSKY

Internet Security 7.0 - 3 User

Kaspersky Internet Security 7.0 provides you with the same proven anti-virus protection as Kaspersky Anti-Virus together with additional features including Parental Control, a personal firewall, an anti-spam filter, Privacy Control and more.

\$89 | V2255



TREND MICRO

PC-cillin Internet Security Pro 2008

- Anti-Virus blocks Internet worms and intruders at point of entry
- Anti-Spyware stops spyware from tracking you online
- Email safety scan removes viruses from email and instant messages

\$109 | 3 USER | V1333
\$165 | 5 USER | V1334

BONUS 1GB Micro MP3 Player⁴

ScanJet 5590 Digital Flatbed Scanner

- Optical scanning resolution: up to 2400 dpi
- Hardware scanning resolution: up to 2400 x 2400 dpi
- Bit depth: 48-bit
- Scan and e-mail photos and documents
- Hi-Speed USB
- 1 year warranty



\$949 | N8512 | RENT \$10.98/wk*

LIDE600F Scanner

Canon

- High quality scanning at 4800 x 9600 dpi
- USB 2.0 Hi-Speed interface for fast scanning
- Automatic dust and scratch, fading, graininess and backlight correction technology
- Mac and PC compatibility



\$239 | U5466

CS8800F Flatbed Scanner

Canon

- High-resolution scanning up to 4800 x 9600dpi, 48 bit input/output resolution
- FARE Level 3, the optimal solution for film scanning.
- Automatic dust and scratch, fading, graininess and backlight correction technology
- Continuous scanning of up to 12 frames of 35mm filmstrip or 4 mounted slides



\$349 | V4265

LIDE90 Scanner

Canon

- High quality scanning up to 2400 x 4800dpi high resolution and 48 bit superior gradation
- USB 2.0 Hi-Speed interface for fast data transfer.
- Automatic dust and scratch, fading, graininess correction
- Backlight correction available for reflectives
- Four one-touch buttons scan/copy/PDF/e-mail for easy operation



\$149 | V1811

Executive v8

CardScan

- Desktop card scanner
- Full-featured contact
- Management software
- Ideal for the power user
- Synchronise easily with Outlook



\$349 | U2695

BONUS WATERMAN CARENE PEN¹ VALUED AT \$285

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. ¹Purchase a Cardscan Executive between 25/01/08 and 02/03/08 and receive a bonus Waterman Pen via redemption. See cardscan@ht.com.au for details.

Purchase

3 specially marked HP Ink Cartridges

Receive

A HP A320 Photo Smart Printer



RRP \$119

To receive your HP A320 printer and to go into the draw to win a trip to Disneyland simply follow these instructions.

1. Purchase any 3 specially marked HP ink cartridges (look for the pink banner on the packaging)
2. Visit www.hp.com.au/supplies and follow the prompts to the ink promotion
3. Register (once only) your details to become a user, or login if you're an existing member
4. Enter the 3 special promotional codes (located inside the box)

Full terms and conditions are available at www.hp.com.au/supplies follow the prompts to the promotions for ink

Win a trip to Disneyland!

You could be going to Disneyland Hong Kong, 2 adults, 2 children, 5 days/4 nights, business class, includes \$2000 spending money. Total value \$27,000



Purchase

5 specially marked HP Toner Cartridges

\$150

OR

Receive

A Kaiser Baas 10.4" Digital Photo Frame or \$150 cashback



RRP \$399

Purchase

15 specially marked HP Toner Cartridges

\$500

OR

Receive

A Digital Nikon DSLR D40X or \$500 cashback



RRP \$1099

To take advantage of this great offer, simply follow these instructions:

1. Purchase from our range of specially marked HP original Toner Cartridges and redeem between 01/02/08 and 30/04/08
2. Visit www.hp.com.au/supplies and follow the prompts to promotions for toners
3. Register you details and enter your special promotional code (located on the sticker on the outside of the Toner box).
4. For further enquiries please contact 1 800 004 700

Full terms and conditions are available at www.hp.com.au/supplies follow the prompts to the promotions for ink

Harris Technology Terms & Conditions

- All purchases are subject to Harris Technology's Terms and Conditions and Returns Policy which can be found at ht.com.au.
 - All prices include any save statements quoted.
 - Prices in this catalogue include GST but exclude delivery charges.
 - Display accessories shown in photographs throughout this publication are not included in the price.
 - All images are for illustration purposes only.
 - All items in this publication have been included in good faith on the basis that the goods will be available at the time of sale. A failure by a supplier to deliver in accordance with sample, description, or at all, may result in some lines being unavailable.
 - We reserve the right to limit supply (excluding SA)
 - While every care has been taken to ensure accuracy in this catalogue, we reserve the right to change incorrect prices resulting from a printing or typographical error.
 - Harris Technology publishes price changes and any other important corrections regarding this catalogue both on its website ht.com.au, through notices in store and by public notice in The Australian at the earliest opportunity.
- # Available capacity of hard drive may be less due to preinstalled software.

Ordering and Delivery

Orders can be collected from one of our locations or delivered, anywhere Australia wide. Delivery charges applicable. Delivery times quoted by sales staff are our best estimates based on information received from the manufacturers. Please inquire about all delivery charges as they vary for locations and items purchased. Please call us on 1300 13 9999 or visit ht.com.au for an accurate freight quote based on your order.

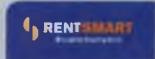
DELIVERY ONLY

Some items in this catalogue are for delivery only. Delivery charges apply. Call 1300 13 9999 or visit delivery.ht.com.au for details.



*RENTSMART

The figures quoted are based on a per week basis over 48 months. Standard rentsmart terms and conditions apply.



ONLINE ONLY

ONLINE ONLY

*Online Only Offers available online only between 01/02/08 and 29/02/08. Delivery charges may apply. Not available in conjunction with any other offer. Not available in Business Centres or via phone. No further discounts available. Only while stocks last. Limited supply per customer [except SA]. Offer subject to Harris Technology's Returns Policy and Terms & Conditions of purchase.



WIN!

Purchase any two HP Photo paper packs between 01/02/08 and 31/03/08 for your chance to win one of five Hitachi 50" Plasma (valued at \$3629.99!)

Visit www.hp.com.au/supplies to enter

one of five
Hitachi 50" Plasma



DYMO

Purchase the
LabelWriter400
and receive

\$30 Cashback!*

OR

Purchase the
LabelWriter400
Turbo

or

LabelWriter400
Duo

and receive

\$50 Cashback!*

DYMO

INKS

HT Part Vendor Part Colour Price HT Part Vendor Part Colour Price



22643	51645AA	No 45 Black	\$52.95
70165	C4844AA	No 10 Black	\$59.95
97335	C6578AA	No 78 Tri-Colour	\$99.95
A2595	C6615DA	No 15 Black	\$48.95
B8508	C4810A	No 11 Black	\$59.95
F9885	C6658AA	No 58 Photo	\$41.95
F9886	C6657AA	No 57 Tri-Colour	\$57.95
G0251	C8727AA	No 27 Black	\$32.95
J6244	C5011DA	No 14 Black	\$44.95
J6262	C5010DA	No 14 Tri-Colour	\$59.95
Q1676	C8766WA	No 95 Tri-Colour	\$39.95
Q1677	C8767WA	No 96 Black	\$53.95
Q1680	C8765WA	No 94 Black	\$35.95
Q1870	C9363WA	No 97 Tri-Colour	\$59.95
U8497	CC620AA	No 56 Black - Twin Pack	\$58.95
S2199	C6656AA	No 56 Black	\$34.95
S3034	C6578DA	No 78 Tri-Colour	\$56.95
S5190	Y2016AA	No 27A/28A Combo Pack	\$59.95
V1604	CC629AA	No 56/57 - Combo Pack	\$76.95
T0852	C9351AA	No 21 Black	\$25.95
T0853	C9352AA	No 22 Tri-Colour	\$29.95
T1633	C8721WA	No 02 Black	\$31.95
T1634	C8722WA	No 02 Magenta	\$18.95
T1635	C8771WA	No 02 Cyan	\$16.95
T1636	C8773WA	No 02 Yellow	\$16.95
T1658	C9361WA	No 93 Tri-Colour	\$32.95
T1659	C9362WA	No 92 Black	\$25.95
T3786	C9391A	No 88 Lg Cyan	\$41.95
T3787	C9392A	No 88 Lg Magenta	\$41.95
T3789	C9393A	No 88 Lg Yellow	\$41.95
T3790	C9396A	No 88 Lg Black	\$57.95
T5035	C4814A	No 13 Black	\$39.95
T5305	C4816A	No 13 Magenta	\$39.95
T6834	C4815A	No 13 Cyan	\$39.95
T7733	C9364WA	No 98 Black	\$29.95

EPSON

EXCEED YOUR VISION

96455	T007	Black	\$32.95
96456	T009	Colour	\$44.95
F3541	T0341	Black	\$22.95
F3544	T0343	Magenta	\$22.95
M0952	T0491	Black	\$19.95
M1054	T0492	Cyan	\$19.95
M1056	T0493	Magenta	\$19.95
M1063	T0494	Yellow	\$19.95
N9690	T0542	Cyan	\$22.95
N9692	T0543	Magenta	\$22.95
N9694	T0544	Yellow	\$22.95
N9706	T0547	Red	\$22.95
N9707	T0549	Blue	\$22.95
S3350	T0594	Yellow	\$22.95
S3493	T0595	Light Cyan	\$22.95
S3494	T0596	Light Magenta	\$22.95
S3495	T0597	Light Black	\$22.95
S3497	T0599	Light Black	\$22.95

Canon

advanced simplicity

81586	BCI3EBK	Black	\$22.95
C3420	BCI6BK	Black	\$24.95
C3424	BCI6C	Cyan	\$24.95
C3426	BCI6M	Magenta	\$24.95
C3428	BCI6Y	Yellow	\$24.95
N0339	BCI6R	Red	\$24.95
N6587	BCI6G	Green	\$24.95
D3232	BCI24BK	Black	\$14.95
H8779	BCI15BK	Black	\$25.95
N1207	BCI24BK-TWIN	Black Twin Pack	\$24.95
N1208	BCI24C-TWIN	Colour Twin Pack	\$52.95
S7128	PG40	Black	\$37.95
S9213	CL41	Tri-Colour	\$39.95
S9563	CL18C	Cyan	\$26.95
S9564	CL18M	Magenta	\$26.95
S9565	CL18Y	Yellow	\$26.95

brother

Q1657	LC-47BK	Black	\$32.95
Q1659	LC-47C	Cyan	\$19.95
Q1660	LC-47M	Magenta	\$19.95
Q1661	LC-47Y	Yellow	\$19.95
T7160	LC-47BK2PK	Black Ink Twin Pk	\$55.95
T7161	LC-47CL3PK	Colour Value Pk	\$46.95
U1087	LC-57BK	Black	\$32.95
U1088	LC-57C	Cyan	\$18.95
U1089	LC-57M	Magenta	\$18.95
U1090	LC-57Y	Yellow	\$18.95

Buy 2 or more ink and toners and

SAVE 10%



For terms and conditions see page 47. *Offer valid between 01/02/08 and 31/03/08. Full terms and conditions available at www.hp.com.au/supplies and follow the prompts to promotions for paper. Offer valid between 01/02/08 and 02/03/08. See www.dymo.com.au for details. Cashback via redemption from DYMO. Postage



Minimise your environmental impact with HP LaserJet Printers

The HP LaserJet Carbon Offset Program

HP has launched another initiative to help you minimise your environmental footprint. A customer who buys any HP LaserJet before 30/04/08 can claim a bonus offset carbon credit. This is representative of carbon emissions produced over the lifetime³ of the HP LaserJet printer being offset by HP through the purchase of carbon credits. HP is partnering with Climate Positive to source carbon credits, including Australian renewable energy projects, that help to reduce greenhouse gas emissions. For more information visit: www.hp.com.au/co2.

TONERS

HT Part	Vendor Part	Colour	Yield	Price
brother				
95205	TN-6600	Black		\$119.00
D8989	TN-8000	Black		\$49.95
S2372	DR-2025	Black		\$149.00
E4336	DR-8000	Black		\$249.00
M9543	TN-04BK	Black		\$249.00
N1558	TN-3060	Black		\$129.00
R7305	TN-2025	Black		\$89.95
T3576	TN-3185	Black		\$129.00

Canon

advanced simplicity

87989	EP22CART	Black		\$109.00
L7104	EP26CART	Black		\$129.00
Q6538	CARTU	Black		\$119.00
S1818	CART303	Black		\$109.00
S7054	FX9	Black		\$149.00
T6876	CART308	Black		\$99.95
T6877	CART308II	Black		\$189.00

EPSON

EXCEED YOUR VISION

R4237	C13S050190	Black		\$119.00
Q4472	C13S050187	Yellow		\$199.00
R4241	C13S050189	Cyan		\$199.00
R4242	C13S050188	Magenta		\$199.00

SAMSUNG

F5229	SCX-5312D6	Black		\$119.00
J2380	ML-1710D3	Black		\$119.00
J9653	SCX-4216D3	Black		\$119.00
L7764	ML-2550DA	Black		\$249.00
M9755	CLP-500D7K	Black		\$159.00
M9757	CLP-500D5M	Magenta		\$179.00
M9758	CLP-500D5Y	Yellow		\$179.00
M9760	CLP-500RT	Black		\$249.00
M9761	CLP-500WB	Waste Toner Box		\$25.00
S2536	CLP-510D5C	Cyan		\$189.00
S2538	CLP-510D5Y	Yellow		\$189.00
U0655	CLP-Y300A/SEE	Yellow		\$89.00

Buy 5 or more ink and toners and

SAVE 20%



charges may apply. ³CO2 calculation is based on avg. energy consumption of printer (supplies & media excluded) as defined by the ENERGY STAR® Program Requirements for Imaging Equipment, Version 1.0 Typical Electricity Consumption (TEC) over 5yr lifetime.



HT Part	Vendor Part	Colour	Yield	Price
19947	C3903A	Black		\$149.00
22960	C3906A	Black		\$119.00
54731	C4127X	Black		\$199.00
61686	C4129X	Black		\$249.00
72653	C4195A	Black		\$129.00
73192	C4096A	Black		\$169.00
C0249	C8061X	Black		\$199.00
C0936	C7115A	Black		\$99.95
D0031	C7115X	Black		\$129.00
F1350	C9723A	Magenta		\$329.00
F1351	C9722A	Yellow		\$329.00
F1352	C9720A	Black		\$239.00
F1353	C9721A	Cyan		\$329.00
J0535	Q2613X	Black		\$139.00
J0537	Q2610A	Black		\$199.00
L0381	Q2612A	Black		\$119.00
M0866	Q2670A	Black		\$199.00
M0868	Q2671A	Cyan		\$199.00
M0869	Q2672A	Yellow		\$199.00
M0870	Q2673A	Magenta		\$199.00
N8595	Q3960A	Black		\$139.00
N8597	Q3971A	Cyan		\$119.00
N8598	Q3972A	Yellow		\$119.00
N8599	Q3973A	Magenta		\$119.00
N8600	Q3964A	Black		\$289.00
N9527	Q3961A	Cyan		\$169.00
N9528	Q3962A	Yellow		\$169.00
N9532	Q3963A	Magenta		\$169.00
P9322	Q5949A	Black		\$119.00
P9323	Q5949X	Black		\$219.00
Q4118	Q6511A	Black		\$199.00
Q4121	Q6511X	Black		\$349.00
Q4123	Q5942A	Black		\$229.00
Q4124	Q5942X	Black		\$349.00
S5168	Q6000A	Black		\$129.00
S5170	Q6001A	Cyan		\$139.00
S5171	Q6002A	Yellow		\$139.00
S5172	Q6003A	Magenta		\$139.00
T3958	Q6470A	Black		\$219.00

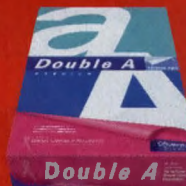
X FUJI XEROX

R6900	CT200649	Black		\$129.00
R6901	CT200650	Cyan		\$199.00
R6902	CT200651	Magenta		\$199.00
R6903	CT200652	Yellow		\$199.00



Double A
Double Quality

Double A A4
500 page ream



\$6⁴⁹

T4776

Double A A4
2500 page box



\$31⁹⁰

T4779

Double A A3
500 page ream



\$18⁹⁵

T4777

LABEL PRINTERS

Dymo LW400

DYMO

- 300 dpi for super quality labels
- Makes labels up to 60 mm wide
- 40 labels per minute print speed
- Label Release feature for simplified loading and unloading of labels
- USB connection
- PC and Mac compatible

BONUS

SAVE \$10



YOU PAY \$139 BEFORE \$30 CASHBACK

\$109 | U8563

BONUS \$30 CASHBACK*

Dymo LW400 Turbo

DYMO

- 300 dpi for super quality labels
- Up to 60mm wide labels
- 55 labels per minute print speed
- Automatic back-up of first label
- Label Release feature for simplified unloading of labels
- USB connection
- PC and Mac compatible

BONUS

SAVE \$20



YOU PAY \$229 BEFORE \$50 CASHBACK

\$179 | U8564

BONUS \$50 CASHBACK*

Dymo LW Duo

DYMO

- 300 dpi for super quality labels
- Up to 60mm wide labels
- 55 labels per minute print speed
- Automatic back-up of first label
- Label Release feature for simplified unloading of labels
- USB connection
- PC and Mac compatible

BONUS

SAVE \$50



YOU PAY \$349 BEFORE \$50 CASHBACK

\$299 | U8565

BONUS \$50 CASHBACK*



HARRIS TECHNOLOGY SERVICES

INSTALLATION HEADACHES?

Let the experts at Harris Technology do it for you. Do you wish you had an IT department to solve your technical headaches? Now even small businesses can afford to have one! Outsourcing technicians from Harris Technology is a smart way to keep your business operational at any time, ensuring ongoing maintenance and minimising your fixed costs.

PRINTER INSTALLATION STANDARD PACK

- Install one new printer (local or network)
- Install printer drivers on up to 2 PCs
- Perform test prints

\$162[^]

SITE VISIT | U5901

MONO LASER PRINTERS

LBP3300

Canon

- Print Speed: up to 21ppm - A4
- Print Resolution: 2400 dpi x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 8MB
- Connection: Hi-Speed USB
- Warranty: 1 year



\$349 | T6875

HL-5250DN

brother

- Print Speed: up to 30ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 300 Sheets
- Memory: 32MB
- Connection: USB / Ethernet connection
- Duplex mode for dual sided printouts
- Monthly duty cycle: 20,000 pages
- Warranty: 1 year



\$449 | T3555

FS-2000D

KYOCERA

- Print Speed: up to 30ppm
- Print Resolution: Fine 1200
- Memory: 64MB/576MB (max)
- Connection: Parallel, Hi-Speed USB
- Monthly Duty Cycle: 150,000 pages
- 2 year on-site warranty



\$999 | T7679 | RENT \$9.05/wk*

FS-3900DN

KYOCERA

- Print Speed: up to 35ppm
- Print Resolution: Fine 1200
- Memory: 64MB/576MB (max)
- Connection: Ethernet, Parallel, Hi-Speed USB
- Monthly Duty Cycle: 200,000 pages
- 2 year on-site warranty



\$1229 | T7701 | RENT \$11.13/wk*

*For terms and conditions, including RentSmart and Online Only, see page 47. Rent price based on 48 month term. ^Charges apply only to Metropolitan locations within 50km from General Post Office. *Purchase a DYMO

ONLINE ONLY* ADDITIONAL 10% OFF ALL LASER PRINTERS

MONO LASER PRINTERS

ML-2010 Mono Laser Printer

- Print Speed: up to 20ppm - A4
- Print Resolution: 1200 dpi x 600 dpi
- Total Media Capacity: 150 sheets
- Memory: 8MB
- Connection: USB
- Monthly duty cycle: 5000 pages
- Warranty: 1 year

HOT
PRICE

\$79 | T0775



SAMSUNG

LaserJet P2015 Series

- Print Speed: up to 26ppm A4
- Print Resolution: up to 1200 x 1200 dpi
- Total Media Capacity: 300 sheets
- Memory: 32MB (expandable 288MB)
- Connection: Hi-Speed USB, Ethernet (embedded print server)
- Monthly duty cycle: 15,000 pages per month
- Warranty: 1 year



\$699

P2015N | U4728 | RENT \$6.33/wk*

Also Available:

HP LaserJet P2015DN | \$799 | U6036 | RENT \$7.23/wk*

HP LaserJet P2015X | \$899 | U5828 | RENT \$8.14/wk*

HP LaserJet P2015 | \$579 | U5652 | RENT \$5.24/wk*

BONUS

BONUS 2 YEAR WARRANTY AND TONER²

LaserJet P3005 Series

- Print Speed: up to 33ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 600 sheets
- Memory: 48MB (expandable 320MB)
- Connection: Parallel, Hi-Speed USB
- Monthly duty cycle: 100,000 pages
- Warranty: 2 year on-site



\$1099

U4776 | RENT \$9.95/wk*

Also Available:

HP LaserJet P3005N¹ | \$1429 | U5328 | RENT \$12.96/wk*HP LaserJet P3005DN¹ | \$1599 | U5330 | RENT \$14.50/wk*HP LaserJet P3005X¹ | \$2329 | U5331 | RENT \$20.32/wk*

BONUS

BONUS 2 YEAR WARRANTY AND TONER²

ONLINE ONLY* ADDITIONAL 10% OFF ALL LASER PRINTERS

LabelWriter400, LW400 Turbo or LW Duo between 01/01/08 and 02/03/08 and receive up to \$50 CashBack via redemption from DYMO. See www.dymo.com.au for details. Postage charges may apply. ²Purchase select HP LaserJet printers and receive a Bonus HP Care Pack 2 year additional warranty plus HP LaserJet Print Cartridge (black). Offer available from 01/02/08 till 29/02/08. Visit the HP LaserJet Bonus Bonanza redemption page at ht.hp.com.au for details.

INK JET PRINTERS

PhotoSmart C5280 All-In-One



- Printer/Copier/Scanner
- Print Speed: up to 32ppm mono and up to 24ppm colour
- In-Built card reader
- CD/DVD print capability
- 2.4" Colour LCD Screen
- Connection: USB
- Warranty: 1 year



\$189 | U9770

BONUS 80GB HARD DRIVE¹
VALUED AT \$149

TEST DRIVE PRINTING TECHNOLOGY IN-STORE TODAY

liveprintdemo



iP90V Portable Printer



- Print Speed: up to 16ppm black and 12ppm colour
- Resolution: 4800 x 1200 dpi printing
- Total Media Capacity: 30 sheets
- Built-in infrared for wireless printing
- Weighs only 1.8kg
- Up to A4 size borderless photo printing

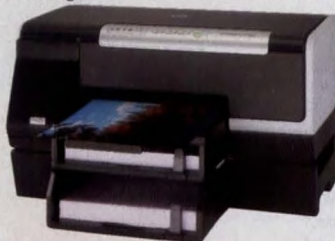


\$429 | U9077

OfficeJet Pro K5400DTN



- Print speed: up to 36ppm mono and 35ppm colour
- Print Resolution: 4800 dpi colour
- Duplex (dual sided) printing
- Total Media Capacity: 600 sheets
- PCL 3 support
- Extra paper tray (total paper holding 600 pages)
- Built in networking



30 DAY MONEY BACK GUARANTEE²

\$379 | U7751

Deskjet 460 CB Portable Printer



- Print Speed: up to 17ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 50 sheets
- Memory: 32MB
- Connection: USB



\$449 | T3509

BONUS 120GB HARD DRIVE¹
VALUED AT \$249

Stylus Photo R800 Printer



- Print Speed: up to 17ppm mono and 8ppm colour
- Print Resolution: 5760 dpi x 1440 dpi
- Total Media Capacity: 120 sheets
- Connection: 1 x Hi-Speed USB - 4 PIN USB Type B 1 x IEEE 1394 (FireWire)
- 1 year warranty



\$579 | N9471 | RENT \$5.24/wk*

Pixma iX4000 Inkjet Printer



- Print Speed: up to 18ppm mono and 14ppm colour
- Print Resolution: 4800 dpi x 1200 dpi
- Total Media Capacity: 150 Sheets
- Connection: Hi-Speed USB Duplex
- 1 year warranty



\$539 | T9252

Pixma IP4500 Printer



This premium Photo Document Printer offers digital camera owners extra functionality and quality at an unbeatable price. Print what you want, how you want - at high speed and with exceptional results.



\$199 | V2219

*For terms and conditions, including RentSmart and Online Only, see page 47. Rent price based on 48 month term. ¹Purchase any Photosmart, Officejet and Officejet Pro Printers between 01/01/08 and 31/03/08 and receive either an 80GB or 120GB HP Portable Media Drive via redemption. Visit hp.ht.com.au for details. Postage and handling fees apply. ²Money Back Guarantee by redemption from HP on purchases until 30/04/08 see hp.ht.com.au for more details. ³Purchase a qualifying Fuji Xerox Colour Networked Printer or A4 Colour MFD between 01/01/08 and 31/03/08 to receive a carbon neutral return flight Visit www.fxprinters.com.au for details. Postage fees may apply. *Cashback

COLOUR LASER PRINTERS

Colour LaserJet
1600 Printer

- Print Speed: up to 8ppm mono and colour
- Print Resolution: 600 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 16MB
- Connection: Hi-Speed USB
- Warranty: 1 year return to base

**BEFORE
CASHBACK
YOU PAY \$399**

\$199 | T6120

Colour LaserJet
2600N Printer

- Print Speed: up to 8ppm mono and colour
- Print Resolution: 600 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 16MB
- Connection: Hi-Speed USB, Ethernet 10/100Base-TX
- Monthly Duty Cycle: 35,000 pages
- Warranty: 1 year

**BEFORE
CASHBACK
YOU PAY \$599**

\$399 | S2505

Magicolor 2530DL Printer



- Print Speed: up to 20ppm mono and 5ppm colour
- Print Resolution: 2400 dpi x 600 dpi
- Total Media Capacity: 200 sheets
- Memory: 64MB (expandable to 576MB)
- Monthly Duty Cycle: 35,000 pages
- Warranty: 2 years on-site



\$559 | U0076 | RENT \$5.06/wk*

HL-4040CN Colour
Laser Printer

- Print Speed: up to 20ppm mono and colour
- Print Resolution: 2400 dpi x 600 dpi
- Total Media Capacity: 300 sheets
- Memory: 64MB
- Monthly Duty Cycle: 35,000 pages
- Warranty: 1 year

**BEFORE
CASHBACK
YOU PAY \$699**

\$599 | U8244 | RENT \$6.33/wk*



**SAVE
\$100**

**\$100
CASHBACK⁵**

Docuprint C1110 Colour Laser



- Print speed of up to 12ppm colour and 16ppm mono
- Speedy first page out time of 9 seconds for mono and 12 seconds for colour
- Amazing print quality at up to 9600 x 600 dpi (enhanced) and 600 x 600 dpi with EA Toner
- Generous 250-sheet paper tray and a manual feeder

BONUS

\$599 | V4861 | RENT \$5.42/wk*

BONUS DOMESTIC RETURN FLIGHT³



Colour LaserJet 2605DN Printer



- Print Speed: up to 12ppm mono and 10ppm colour
- Resolution: 600 x 600 dpi
- Memory: 64MB (expandable 320MB)
- Connection: Hi-Speed USB, Ethernet 10/100Base-TX
- Duplex/Networked
- Monthly Duty Cycle: 35,000 pages
- Warranty: 1 year

BONUS

\$779

T7115 | RENT \$7.05/wk*

BONUS 2 YEAR WARRANTY AND TONER⁵



by redemption from HP on purchases between 01/01/08 and 31/03/08. See hp.ht.com.au for full terms & conditions. Redemption fees may apply to all cashbacks.⁵ Purchase select HP LaserJet printers and receive a Bonus HP Care Pack 2 year additional warranty plus HP LaserJet Print Cartridge (black). Offer available from 01/02/08 till 29/02/08. Visit the HP LaserJet Bonus Bonanza redemption page at hp.ht.com.au for details. ⁶Purchase the Brother HL-4040CN Printer between 16/01/08 and the 31/03/08 & receive \$100 CashBack via redemption from Brother. For full terms & conditions visit brother.ht.com.au. Postage fees may apply.

ONLINE ONLY* ADDITIONAL 10% OFF ALL LASER PRINTERS

MULTI-FUNCTION INKJET PRINTERS

MFC-685CW

brother

- Colour Print
- Colour Copy
- Direct Photo Printing
- 3.3" Colour LCD
- Wireless / Network Ready
- Reallusion® FaceFilter Studio Software



**BEFORE CASHBACK
YOU PAY \$349**

\$299 | V1069

**\$50
CASHBACK⁶**

MFC-885CW

brother

INCLUDES CORDLESS PHONE

- Colour print, scan and copy
- Up to 10-Sheet ADF
- 4.2" wide Colour LCD
- DECT Handset & TAD
- Wireless / Network Ready
- Reallusion® FaceFilter Studio Software



**BEFORE CASHBACK
YOU PAY \$499**

\$449 | V4559

**\$50
CASHBACK⁶**

LASER PRINTER

LBP5100 Colour Laser Printer

Canon

- Print Speed: Up to 10ppm Mono/
12ppm Colour
- Print Resolution: 9600 dpi x 600 dpi
- Auto duplex for double side printing
- Total Media Capacity: 250 sheets

**\$100
CASHBACK³**



**BEFORE CASHBACK
YOU PAY \$599**

\$499 | U9214 | RENT \$5.42/wk*

BONUS \$100 CASHBACK⁴

OfficeJet Pro L7580

- Print & Copy Speed: up to 36ppm mono and 35 ppm colour
- Print Resolution: up to 4800 x 1200 dpi colour printing on premium photo paper; 1200 x 1200 dpi input
- Scan Resolution: up to 2400 x 4800 dpi
- Total Media Capacity: 250 sheets
- Memory: 64MB
- Connection: USB, Ethernet 10 Base-T

\$499 | U8052

BONUS 120GB HARD DRIVE VIA REDEMPTION¹ VALUED AT \$249



OfficeJet 7410 Printer All In One



- Print & Copy Speed: up to 30ppm mono and 20ppm colour
- Print Resolution: up to 1200 x 1200 dpi mono and 4800 x 1200 dpi colour
- Scan Resolution: 2400 x 2400 dpi



\$549 | Q2905

PIXMA MX700

Canon

- 4800 x 1200 dpi resolution
- 2 picolitre FINE print-head technology for high quality photos and documents
- Chromalife100 to produce long lasting printed photos with a combination of Canon's genuine dye ink and genuine photo papers

**BEFORE CASHBACK
YOU PAY \$270**

\$220 | V2224

BONUS \$50 CASHBACK⁴



**\$50
CASHBACK²**

CM1015 MFP



- Printer/copier/scanner
- 6-in-1 card reader
- Up to 600 x 600 dpi mono and colour print resolution
- Supports PCL 6, PostScript 3, PCL 5c
- Up to 8ppm mono and colour



**BEFORE CASHBACK
YOU PAY \$799**

\$599 | U0876 | RENT \$7.23/wk*

**\$200
CASHBACK⁴**

CM1017 MFP



- Printer/copier/scanner
- 6-in-1 card reader
- Print Speed: up to 8ppm mono and colour
- Print Resolution: up to 600 x 600 dpi mono and colour



**BEFORE CASHBACK
YOU PAY \$999**

\$799 | U0877 | RENT \$9.05/wk*

**\$200
CASHBACK⁴**

PIXMA MP830

- Printer/Copier/Scanner/Fax
- Print Speed: up to 30ppm mono and 24ppm colour
- Print Resolution: up to 600 x 600 dpi mono and 9600 x 2400 dpi colour
- Scan Resolution: 2400 x 4800 dpi
- ADF & Built in Duplex
- Standard Media Capacity: 300 sheets
- Warranty: 1 year

**BEFORE CASHBACK
YOU PAY \$499**

\$399 | T6987

BONUS \$100 CASHBACK²

**\$100
CASHBACK²**



Canon

*For terms and conditions, including RentSmart, see page 47. Rent price based on 48 month term. ^Charges apply only to Metropolitan locations within 50km from General Post Office. ¹Purchase any Photosmart, Officejet and Officejet Pro Printers between 01/01/08 and 31/03/08 and receive either an 80GB or 120GB HP Portable Media Drive via redemption. Visit hp.ht.com.au for details. Postage and handling fees apply. ²Purchase selected Canon Pixma between 01/01/08 and 29/02/08 and receive up to \$100 cashback via redemption. For full terms and conditions see canon.ht.com.au. Postage fees may apply. ³Purchase a Canon LBP5100 Laser Printer between 01/01/08 and 29/02/08 and receive \$100 cashback via

MULTI-FUNCTION LASER PRINTERS

MFC-7220

- Brother MFC-7220 6 in 1 Laser MFC
- Print & Copy Speed: Up to 20ppm
- Scan Resolution: 200 x 400 dpi
- Total Media Capacity: 250 sheets
- Memory: 16MB
- Connection: Parallel, USB
- Warranty: 1 year



brother

\$349 | S2370

2840 Multifunction Colour Laserjet Printer

- Printer/Copier/Scanner/Fax
- 7-in-1 card reader
- Print speed: up to 19ppm mono and 4ppm colour
- Print Resolution: up to 600 x 1200 dpi mono and 600 x 600 dpi colour
- Scan Resolution: 1200 x 1200 dpi
- Connection: Hi-Speed USB, Ethernet
- Warranty: 1 year on-site

hp
invent

BONUS

\$999 | S1217 | RENT \$9.05/wk*

BONUS 2 YEAR WARRANTY AND TONER⁵

Laserjet 3055 All in One Printer

- Printer/copier/scanner/fax
- Print speed: up to 18ppm
- Print Resolution: up to 1200 x 1200 dpi
- PCL 5e, PCL 6, PostScript 3 support
- Scan resolution: 600 dpi
- Hi-Speed USB, Ethernet
- Windows and Mac compatible
- Warranty: 1 year

hp
invent

\$649 | T4390 | RENT \$5.88/wk*

FS-1118MFPD

- Copier/printer/colour scanner
- Automatic Document Feeder
- Print & Copy Speed: up to 18ppm
- Print Resolution: 1200 x 600 dpi
- Scan Resolution: 600 x 600 dpi
- Max Media Capacity: 550 Sheets
- Connection: Parallel, Hi-Speed USB, Ethernet
- 2 years on-site warranty



KYOCERA

LOWEST RUNNING COSTS IN ITS CLASS

\$1399 | V3218 | RENT \$12.69/wk*

MF5770

Canon

- Printer/Copy/Scan/Fax
- Print & Copy Speed: up to 20ppm
- Print Resolution: Up to 1200 x 600 dpi
- Scan Resolution: 1200 x 2400 dpi
- Total Media Capacity: 250 sheets
- Connection: Hi-Speed USB, Ethernet
- Warranty: 1 year



\$559 | S8188 | RENT \$5.06/wk*

HARRIS TECHNOLOGY
SERVICES

PRINTER INSTALLATION

- Unpack one new multifunction printer/scanner/copier/fax
- Install new multifunction printer/scanner/copier/fax (local or network)
- Install printer drivers on up to 2 PCs
- Configure scanning to 1 PC
- Configure fax capability (existing fax line)
- Test copier function
- Provide 15 mins familiarisation with device
- Perform test prints

\$188[^]

| SITE VISIT | U5899

redemption. For full terms and conditions see canon@ht.com.au. Postage fees may apply.*Cashback by redemption from HP on purchases between 01/01/08 and 31/03/08. See hp.ht.com.au for full terms & conditions. Redemption fees may apply to all cashbacks.*Purchase select HP LaserJet printers and receive a Bonus HP Care Pack 2 year additional warranty plus HP LaserJet Print Cartridge (black). Offer available from 01/02/08 till 29/02/08. Visit the HP LaserJet Bonus Bonanza redemption page at hp.ht.com.au for details. *Purchase the Brother MFC-685CW or MFC-885CW Printer between 16/01/08 and the 31/03/08 and receive \$50 CashBack via redemption from Brother. For full terms & conditions visit brother.ht.com.au. Postage fees may apply.

UPDATE YOUR HOME OR OFFICE

harristechnology



ML-2010 Mono Laser Printer

SAMSUNG



HOT PRICE

\$79

T0775 | p.51

DX7400 SFF

GEFORCE 8400 GRAPHICS



invent



HOT PRICE

\$899

V3927 | RENT \$8.14/wk* | p.12

Extensa 562L

acer



\$1199

V4784 | RENT \$11.76/wk* | p.4

BEFORE CASHBACK YOU PAY \$1298

\$99 CASHBACK

BONUS

BONUS 2 Year Acer Extended Warranty & Bag³

FA-22WB 22" LCD Monitor

FUJITSU

22" Wide

HOT PRICE

\$369

V4152 | p.15

LOCATIONS | See locations.ht.com.au

NSW | North Ryde
45 Epping Rd
North Sydney
G Floor Bayer Bldg
275 Alfred St
Parramatta
46 George St
Alexandria
Unit 1/110 Botany Rd

ACT | Fyshwick
29-31 Townsville St

QLD | Fortitude Valley
356 St Pauls Tce
Indooroopilly
254-256 Moggill Rd

WA | Osborne Park
426 Scarborough Beach Rd
Cannington
1359 Albany Hwy

TRADING HOURS

Stores and Call Centre:

Weekdays | 8am - 6pm
(North Ryde 8am - 7pm)

Saturday | 9am - 5pm

Sunday | 10am - 5pm
(WA closed)

ht.com.au | 24/7

NEW STORE!

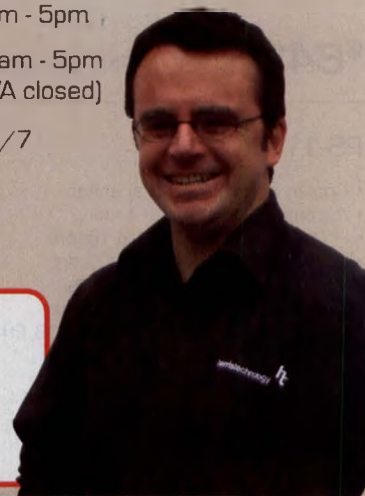
Dandenong

224 Dandenong Rd
Noble Park

OPENS FEB 23

"Come and visit our new store in Dandenong. We have some great specials and prizes on offer as well as fantastic services and advice."

Adrien Kiem,
Area Manager - Retail Operations



Harris Technology Pty Ltd ABN 74-007-870-484

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Pioneer of Innovative Technology

DreamBook Style M66SR/M54

From \$729
RRP Inc-GST



- The BEST VALUE notebook
- Intel Core Duo/Core 2 Duo Processor
- Up to 2GB DDR2 Memory
- 15.4/14.1" Widescreen WXGA Display
- Up to 128MB Integrated Graphics
- Optional 802.11b/g Wireless, Bluetooth, Integrated 1.3 Mega Pixel Camera

DreamBook Style 825

From \$1049
RRP Inc-GST



- New HIGH PERFORMANCE notebook featuring Intel's new Santa Rosa chipset!
- Intel Core 2 Duo Processor
- Up to 2GB DDR2 Memory
- 15.4" Widescreen WXGA Display
- nVidia GeForce Go 8600GS 256MB PCI Express Graphics

DreamBook Light M72/R

From \$999
RRP Inc-GST



- New ULTRA PORTABLE LIGHT-WEIGHT notebook
- Intel Core Duo/Core 2 Duo Processor
- Up to 4GB DDR2 Memory
- 12" Widescreen WXGA Display
- Up to 256MB SIS Integrated Graphics
- Optional Finger Print Reader
- 1.3MP Camera Free

DreamBook UMPC 650

From \$1,299
RRP Inc-GST



- Notebook style PC with 6.5" LCD Touch Screen
- PDA size weighing only 720gm
- MP3 Music, MP4 Video, VOIP, Skype
- Ready for 3G CDMA wireless broadband, GPS navigation and Digital TV
- VIA 1.2GHz CPU
- Up to 1GB DDR2 Memory

DreamBook Power 8827

From \$1,399
RRP Inc-GST



- New HIGH PERFORMANCE notebook
- Intel Celeron-M/Core 2 Duo Processor
- Up to 4GB DDR2 Memory
- 17" Widescreen WXGA Display
- nVidia GeForce Go 8600 512MB dedicated PCI Express Graphics
- Integrated 1.3 Mega Pixel Camera

DreamBook Power M57R

From \$2,249
RRP Inc-GST



- New HIGH PERFORMANCE notebook featuring Intel's new Santa Rosa chipset!
- Intel Core 2 Duo Processor
- Up to 4GB DDR2 Memory
- nVidia GeForce Go 7950/8700/8800GTX 512MB
- 17.1" Widescreen WUXGA Anti-glare Display
- Wireless 802.11b/g/n, 1.3 Mega Pixel Camera

DreamBook Power D90

From \$3,499
RRP Inc-GST



FIRST QUAD-CORE!!!

- The WORLD'S FIRST QUAD-CORE notebook
- Intel Core 2 Duo Q/X Series Processor
- nVidia GeForce Go 7950/8700/8800GTX 512MB x2 SLI
- 17.1" Widescreen WUXGA Anti-glare Display
- 3 x SATA2 Hard Drives with RAID 0/1/5 support
- Optional TV Tuner, 1.3 Mega Pixel Camera, Wireless 802.11b/g/n, Bluetooth

DreamBook Tough S15

From \$2,495
RRP Inc-GST



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